

Part A: FY 2010 National Map Proposal Information Summary

Panel Designation: Orthoimagery_____ Elevation (lidar) XX

Name of the Cooperating Institution: Maine Office of GIS

Project Title: Lidar for the Northeast

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Areal extent of the collection: Full or partial county lidar collections for all coastal areas in New York, Connecticut, Rhode Island, Massachusetts, New Hampshire, and Maine, including many coastal watersheds and subwatersheds. The total area proposed is 13,561 square miles in a continuous swath with no gaps, including all coastal towns in the region, towns adjacent to major tidal rivers, and other adjacent areas deemed important to the stakeholders. Of this area, 8979 square miles is new data, 1056 square miles is being collected by FEMA, and 3526 square miles of other existing data (not in CLICK or NED). Only 58 sq. mi. of this entire region is currently in CLICK and only 410 sq. mi. are in the 1/9th arc-second NED.

Amount Requested:

USGS ARRA 10HQPA0014 funds:	\$1,410,550
Non-federal cash match funds:	\$180,175
Other federal cash contributions:	\$205,075
In-kind non-federal data:	\$705,200
In-kind federal data:	\$211,200
TOTAL BUDGET:	\$2,712,200

Proposed Project Period: June 15, 2010 through September 15, 2011

Number and types of jobs created or retained, labor hours, and anticipated duration:

There are three levels at which we anticipate economic stimulus as a result of this project.

The first line of impact of this project will be to American workers directly involved in the collection and processing of these data, such as the pilots, technicians, and data analysts employed by the vendor(s) performing the lidar collection. We estimate the following employment impact in this sector:

Number	Type	Created/Retained	Hours	Duration
5	Flight planners	Retained	2,000	15 months
24	Pilots and flight crew/technicians	Retained	6,000	15 months
40	Data analysts	Retained	15,000	15 months
10	Project managers	Retained	1,000	15 months
10	Administrative staff	Retained	1,000	15 months

Secondary impact - the second line of impact of this project will be to American workers who directly utilize the resulting data in their work. These are typically private-sector cartographers, planners, consultants, and engineers who live in this region. Their job retention results from being able to do their work less expensively, and add new services to their portfolio, due to the public availability of these data. This results in lower costs to the customer in a time when budgets are tight, rather than customers eliminating these services. We estimate the following employment impact in this sector:

Number	Type	Created/Retained	Hours	Duration
500	Cartographers/GIS Analysts	Retained	300,000	60 months
2000	Planners	Retained	1,200,000	60 months
2000	Consultants	Retained	1,200,000	60 months
2000	Engineers	Retained	1,200,000	60 months

Tertiary impact - the third line of impact of this project will be American citizens throughout the northeast region who experience lower costs for government services, or taxes not being increased, or better value for their homes due to accurate floodplain mapping. In addition, this project will allow coastal emergency managers to better plan for and recover from major storm events, resulting in economic stability. These savings come chiefly as a result of lidar data being free to the communities for mapping purposes such as floodplain mapping, zoning, orthophoto production, and other benefits. It is very difficult to quantify these savings, but using a conservative value of \$20 per household, the total impact is \$150 million.

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The Nature Conservancy (\$15,175 RI, \$50K ME).....	30
USGS Woods Hole (\$20K)	33
NRCS Maine (\$46,200)	35
Acadia National Park (\$10K)	37
Maine DEP (\$5K)	44
Maine State Planning (\$5K)	49
Maine GeoLibrary (\$20K)	50
Maine Coast Heritage Trust (\$20K)	59
New Hampshire DES (\$20K)	73
NRCS Rhode Island (\$3K)	92
RI federal highway (\$75,875)	93
NY State Energy Research (\$40K)	105
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Part C:

Budget Summary

Project Title: Lidar for the Northeast

Principal Investigators: Michael Smith, Fay Rubin, Christian Jacqz, Shane White, Michael Varney, Tim Ruhren.

Cost Category	Federal Funding Requested ¹	Non-Federal / Matching Funds Identified ²	Other federal funds identified ³	In-kind non-federal data ⁴	Federal in-kind data ⁵	TOTAL
1. Salaries and Wages	\$	\$	\$			\$
2. Fringe Benefits/ Labor Overhead	\$	\$	\$			\$
3. Equipment	\$	\$	\$			\$
4. Supplies	\$	\$	\$			\$
5. Services or Consultants	\$1,410,550	\$180,175	\$205,075	\$705,200	\$211,200	\$2,712,200
6. Travel	\$	\$	\$			\$
7. Other Direct Costs	\$	\$	\$			\$
8. Total Direct Costs (sum of 1-7)	\$1,410,550	\$180,175	\$205,075	\$705,200	\$211,200	\$2,712,200
9. Indirect cost/ G&A	\$	\$	\$			\$
10. Amount Proposed (8+9)	\$	\$	\$			\$
11. Total Project Cost	\$1,410,550	\$180,175	\$205,075	\$705,200	\$211,200	\$2,712,200

¹ Funds requested from this ARRA opportunity² Funds provided by state agencies, local municipalities, or non-profit organizations³ Funds supplied for this project from other federal agencies (including USGS), but not part of state or local match⁴ Value of lidar compiled by states at \$200/square mile⁵ Value of lidar provided by FEMA at \$200/square mile

Detailed Budget

The northeast lidar project budget consists entirely of contracted services to collect the data. The contracted service is based on estimates provided by lidar vendors and using an average rate of \$200 per square mile for the collection and preparation of lidar data to the specifications outlined in this proposal. **No other costs for the project are requested as part of this proposal.**

1. Salaries and Wages - no salaries or wages are requested.
2. Fringe benefits/labor overhead - no fringe or overhead is requested.
3. Equipment - no equipment is requested.
4. Supplies - no supplies are requested.
5. Services or consultants - We intend to contract the work out to a qualified vendor via the USGS GPSC or GPSC-2 contract. We have received initial estimates from GPSC-2 vendors that indicate a \$200 per square mile rate is appropriate for the size of this project and the area. These costs are to cover all vendor costs including planning, travel, and data collection, processing, delivery, and correction. It is understood that USGS will provide staff to review the deliverables for acceptability.

The footprint for the entire project is 13,561 square miles. At \$200/sq. mi., the total budget comes to \$2,712,200. Of this we request \$1,410,550 from USGS ARRA funding (52%).

Location	Partner	Type	Amount
Regional	USGS Woods Hole	Federal	\$20,000
Regional	USDA NRCS - Steve Nechero	Federal	\$50,000
Regional	FEMA in-kind lidar (not cash)	Federal	1056 sq mi
Regional	Other in-kind lidar compiled by states, not cash	State	3526 sq mi
Maine	Acadia National Park	Federal	\$10,000
Maine	Maine Dept. of Environmental Protection	State	\$5,000
Maine	Maine GeoLibrary	State	\$20,000
Maine	Maine State Planning Office	State	\$5,000
Maine	USDA NRCS - Maine office	Federal	\$46,200
Maine	The Nature Conservancy - Maine office	State	\$50,000
Maine	Maine Coast Heritage Trust	State	\$20,000
New Hampshire	NH Dept. of Environmental Services	State	\$20,000
Rhode Island	The Nature Conservancy - RI office	State	\$15,175
Rhode Island	US DOT - Federal Highway	Federal	\$75,875
Rhode Island	USDA NRCS - RI office	Federal	\$3,000
New York	NY Dept. of Environmental Conservation	State	\$5,000
New York	NY Energy Research Development Authority	State	\$40,000
Total - State	cash match	6.6%	\$180,175
Total - Federal	cash match	7.6%	\$205,075
Total - state lidar	value of lidar @ \$200/sq. mi.	26.0%	\$705,200
Total - FEMA lidar	value of lidar @ \$200/sq. mi.	7.8%	\$211,200
This request	USGS ARRA funding request 10HQPA0014	52.0%	\$1,410,550
TOTAL BUDGET			\$2,712,200

This budget includes the compilation of 3,526 square miles of existing lidar data, currently available but not in CLICK or NED. We estimate the value of these data at \$705,200. The consortium will compile these data into formats suitable for 1/9th arc-second NED, and CLICK (where possible if LAS files exist or XYZ files can be converted to LAS).

We have been coordinating with FEMA as well, though the exact footprint of their collections are not completely certain. We estimate the value of their data collection, 1056 square miles, to be \$211,200. If this project is funded, the cooperators would continue to coordinate with FEMA to ensure no duplication of effort between this project and FEMA, and to ensure all FEMA-collected products get into CLICK and NED.

Other in-kind contributions, which are difficult to quantify financially, include availability of CORS stations and GPS ground stations for the vendor to use, time taken by state coordinators to interact with partners, and effort required to gather the preexisting data mentioned above.

The coalition is also continuing to seek other funding including USGS partnership funding, state bond funds, and other private sources to provide further additions to the regional collection.

6. Travel - no travel is requested.

7. Other direct costs - no other direct costs are requested.

8. Total Direct Costs \$2,712,200, of which we request \$1,410,550 from USGS ARRA funding 10HQPA0014.

9. Indirect cost/general and administrative (G&A) cost - no indirect costs are requested.

Part D:

Executive Summary

Elevation data acquired using light detection and ranging (lidar) sensors are increasingly being seen as a critical component of America's spatial data infrastructure. Lidar provides a level of precision and accuracy in topography data that is 25 to 100 times better than what is currently available to most of the nation. Lidar applications include floodplain mapping, transportation planning, photo orthorectification, runoff modeling, landcover mapping, shoreline change modeling, air mass modeling, wireless internet propagation, and many more.

There is growing consensus among the geospatial community that national programs, headed by federal stakeholders with state and local cooperation, are needed to ensure consistent geospatial data for our country. Of these, aerial photos and lidar are the most commonly referenced and even have informal program names (Imagery for the Nation, and Lidar for the Nation, respectively). The states of New England have banded together to develop a single, consistent, regional lidar program. This has several benefits beyond just lowering costs. The regional context is the most useful for many analyses including sea level change and flood modeling from the Gulf of Maine to Long Island Sound. The regional program is also a logical pilot project for a national program.

The investigators in this proposal request USGS to provide ARRA funding for the first phase of this regional project, a coastal lidar collection for counties and towns of New England, and in this phase some coastal areas of New York as well, including some tidal rivers such as the Penobscot, Kennebec, and Hudson. The investigators have worked hard to coordinate a consortium of stakeholders including other federal agencies, state government, local government, Indian tribes, and nonprofit organizations. This coordination includes soliciting additional funding, identifying preexisting datasets not currently in CLICK or NED, coordinating lidar projects planned for this region, soliciting letters of support from a broad range of stakeholders, and ensuring the proposed products meet a wide range of elevation data needs.

Initially, we will gather datasets currently available for the region which are not in CLICK or NED, approximately 3526 square miles of data, and FEMA data (1056 sq. mi.). For the rest of the area (8979 sq. mi.), we propose contracting lidar collection to a vendor using an existing federal contracting vehicle such as GPSC-2. The consortium members and other supporting organizations will contribute additional funds to the project through agreements with USGS.

Proposed products include lidar collected at 2m nominal point spacing, with 15cm vertical accuracy, for the entire coastal region between New York City and Eastport, ME and along certain tidal rivers. Deliverables will include lidar point cloud data in .LAS format, breaklines used for hydro-flattening, a 2-meter resolution digital elevation model (DEM), and lidar intensity data. The vendor will be required to meet all of the specifications outlined in the USGS Base Lidar Specification included with the program announcement for this award (10HQPA0014). The timing of the project will meet the USGS requirements by starting June 15, 2010 with work finished by September 15, 2011.

The investigators believe that this project is a rare opportunity to test out the feasibility of a national elevation program coordinating several stakeholders and funding sources, while also stimulating the economy of this region. The proposed project area shares more than continuous waterfront. The states included in this proposal share an infrastructure network, environmental systems, and populations centers whose continued well-being are linked. The project area contains transportation systems which are crucial for the economy of the region and the nation. The tourist attractions along the waters edge are key sources of revenue for local and state governments. Lidar data will help mitigate the impact of floods, while also helping communities plan for potential sea-level rise. The importance of lidar to the applicants is evident from the extent of the areas for which they have already acquired lidar data in the project area. This proposal will leverage these preexisting datasets rather than duplicating them.

Part E:

Project NarrativeProject Description

We propose to use this ARRA-funded opportunity to start a regional lidar collection program for the northeastern states, principally those in New England (Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, and Connecticut) plus New York. These states are linked by common geography, history, climate, and culture, and share a long, well-developed coastal community which includes several large cities (New York and Boston being the largest). Taken together these states host 33 million Americans or 11% of the total US population, despite representing only 3% of US total landmass. Sixty percent of the residents of the northeastern states (20 million people and 7.5 million households) live within the coastal area proposed here.

Considering the importance of this region to our nation, it is surprising that the quality of topography data available for this area is so low. Most of the region is low-elevation and susceptible to coastal flooding and sea level rise, which can have devastating effects not only on large cities but also to the many smaller coastal fishing or tourist communities in the region.

The northeastern states, starting in Autumn of 2008, began discussing how we could work together and coordinate high-resolution topography data collections; the end result being a consistent dataset for the whole region. Lidar offers a cost-effective method for collecting such data, and has several advantages over typical topographic mapping, including the availability of multiple measurements (returns) and intensity data. We believe that we can initiate a program to provide such data regionally. We propose to begin phase I in the coastal areas, funded in part by USGS ARRA money, and using the USGS GPSC-2 contract vehicle. Later phases would expand the coverage to the entire region. Although we have discussed our project with several prominent lidar vendors, we have delayed choosing a vendor until we are assured of the level of funding.

In order to maximize the application of this funding, we also plan to utilize preexisting lidar data sets where available and appropriate, to have them processed in such a way as to be consistent with the USGS base lidar specification and available for import into CLICK and NED. The vendor selected will be asked to determine whether cost savings can be achieved by doing this rather than re-flying an area for new lidar collection. The agencies partnering on this proposal will also oversee subsequent lidar collections in the region which will ensure consistent data standards from one project to the next. We are also aware that FEMA intends to collect data in portions of coastal Rhode Island and Massachusetts. We will continue to coordinate with FEMA as we approach the project start date to ensure a single collect that meets all the needs for those areas. FEMA is supportive of the regional approach to meet their needs as well.

Importance and Applicability*Project location and areal extent*

This project covers 13,561 square miles of coastal area in New England and New York, including all coastal towns and cities from New York City to Eastport, Maine. These cover all or portions of all coastal watersheds in this region. In Maine, Massachusetts, and Rhode Island, where leveraged funding was available, other areas were included. The entire state of Rhode Island is included, as is a significant portion of eastern Massachusetts. In Maine, towns along the tidal portion of the Penobscot and Kennebec Rivers were included, as well as those surrounding Cobscook Bay. In New York, tidal Hudson River is included.

The coastal areas of the Northeast US are highly vulnerable year-round to coastal erosion and flooding resulting from summer and fall hurricanes, and fall, winter, and spring "nor'easters". All of this area is in the USGS coastal high priority area as shown in the program announcement for this funding opportunity. Only 3% of this area already exists as high-resolution elevation data in either the 1/9 arc-second National Elevation Dataset or in the USGS online lidar repository (CLICK). Preexisting lidar data in several areas of New York, Massachusetts, and Maine will be processed for inclusion in the NED and CLICK as part of this project, totaling 3526 sq. mi., and an additional 8979 sq. mi. of new data will be collected. Some portions of this region (an estimated 1056 square miles) will be in FEMA's area of interest, in those cases we will coordinate with FEMA to have a single collectio. At the time this proposal was drafted, FEMA's plans were not completely determined; the consortium will continue to coordinate with FEMA region 1 on lidar collection.

ARRA job creation and retention

It is difficult to quantify the number of jobs that will be created or retained from this project but it is clear that high resolution elevation data will be an essential component to ensuring the economic stability of the Northeast region.

The Northeast is being hard hit by the current economic recession. From recent figures, 5 out of the 6 states in this consortium exceeded 8.4% unemployment and were experiencing among the nation's highest unemployment levels (RI 13%) in decades. The USGS Stimulus funding opportunity will provide a base level of lidar data that, coupled with leveraged funding from States, Federal, NGO and other sources in our region, will allow us to buy-up and produce enhanced topographic data products that will serve the many planning and public safety needs we have in the Northeast. Accurate elevation data are required by cities and towns in their economic, environmental, disaster prevention, response, and recovery planning. Smart planning and development using high resolution elevation data from this project will greatly reduce the negative economic impact that a Katrina-like storm event could bring to our region.

There are three levels at which we anticipate economic stimulus as a result of this project.

The first line of impact of this project will be to American workers directly involved in the collection and processing of these data, such as the pilots, technicians, and data analysts employed by the vendor(s) performing the lidar collection. We estimate the following employment impact in this sector:

Number	Type	Created/Retained	Hours	Duration
5	Flight planners	Retained	2,000	15 months
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10	Project managers	Retained	1,000	15 months
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budgets are tight, rather than customers eliminating these services. We estimate the following employment impact in this sector:

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Tertiary impact - the third line of impact of this project will be American citizens throughout the northeast region who experience lower costs for government services, or taxes not being increased, or better value for their homes due to accurate floodplain mapping. In addition, this project will allow coastal emergency managers to better plan for and recover from major storm events, resulting in economic stability. These savings come chiefly as a result of lidar data being free to the communities for mapping purposes such as floodplain mapping, zoning, orthophoto production, and other benefits. It is very difficult to quantify these savings, but using a conservative value of \$20 per household, the total impact is \$150 million.

Other areas where enhanced lidar data will provide support and stability to our economy and promote the retention and development of new jobs in our region include:

- Transportation Infrastructure – Providing engineers, surveyors, planners with a geospatial database that will enable them to develop plans to improve our aging roads, highways, and bridges throughout the region.
- Alternative energy development – Enhanced elevation data will help in attracting the industrial base for the assembly and maintenance of alternative energy systems for the northeast. Accurate elevation data are critical in finding suitable sites for wind power facilities.
- Communications and utilities- Enhanced elevation data will improve network and planning operations for electric, gas, broadband, phone, and cable providing for more effective and efficient equipment deployment while reaching a larger number customers .
- Climate change – Our coastal and flood plain managers are requiring comprehensive and highly accurate elevation models to determine resources at risk from long-term inundation threats and the increase in the frequency and intensity of storms.
- Emergency preparedness – Our emergency personnel have a need for highly accurate elevation models for use in disaster preparedness for, response to, and recovery from potential hurricanes and nor'easter events.
- Watershed protection and wastewater management – Better data will result in better management and conservation of drinking water resources while enhancing water quality for fisheries, recreation, and tourism.

- Forestry and wildlife - Forest and wildlife managers rely on enhanced elevation models to characterize forest resources and develop baselines for forest fire fuel modeling and monitoring. The result will be more and better resources for the economy and reduced risks.

Relevant and meaningful

This project addresses not only the goals of USGS to protect property and lives, but also collaborative goals of many other stakeholders. Firstly, the geographic area proposed herein is home to approximately 20 million people and 10,500 miles of coastline. Of the 33 million people living in the northeastern states, about 60% of them live within the proposed project area. Collecting a consistent lidar base for this entire area will provide numerous benefits for Americans trying to cope with rising sea levels and a warming global climate.

The northeastern states have garnered support for this project at all levels, and started doing so as early as November of 2008. We include in this proposal support levels and funding commitments from a number of partners including (* indicates a funding partner)

Federal partners:

- USGS*
- National Park Service*
- US Fish and Wildlife Service
- Environmental Protection Agency
- Federal Emergency Management Agency (in-kind support)
- US Department of Transportation*
- Natural Resource Conservation Service*
- Army Corps of Engineers
- National Oceanic and Atmospheric Administration

State partners:

- State Emergency Management Agencies
- State Coastal Zone Management
- Chief Information Officers
- Governor's Offices
- State Departments of Transportation
- State Departments of Health
- State natural resource agencies*
- State planning departments*
- State GIS coordinating bodies*
- State Geospatial Extension Programs
- Army National Guard

Other partners:

- Cities, towns, counties, regional councils of government
- Nonprofits such as The Nature Conservancy* and state Audubon societies
- Real estate sector
- Universities
- Native American tribes

This type of coordination and cooperation is a template for how a national lidar program could be achieved.

The program of data acquisition we propose will be coordinated at the state level with important policy initiatives. One in particular that we would like to highlight is planning for climate change in different state level agencies working in many cases with their Federal line-of-business (LOB) partners. There is broad agreement that improved elevation data are needed to develop adaptation strategies in response to impacts from climate change. The relevance of lidar to understanding climate impacts in New England is discussed below in five categories: Transportation Infrastructure, Ecosystems, Non-Transportation Infrastructure, Human Health and Welfare, and Flood Risk Areas.

Transportation Infrastructure – The National Research Council's Transportation Research Board report on climate change adaptation (2008. *Potential Impacts of Climate Change on U.S. Transportation*. Washington, DC: The National Academies Press. 165) identified extreme temperatures, coastal storm surge, intense rainfall events and river flooding as possible impacts of climate change that asset managers must address across all scales and modes of transportation infrastructure. The report also specifically calls for updated floodplain mapping to evaluate risk associated with any new infrastructure.

Because they tend to be densely settled, New England's coastal areas contain a relatively high proportion of the transportation infrastructure (roadways and the tunnels, bridges, storm water controls, airports and rapid transit). Especially in the low-lying areas characteristic of much of the New England coastline, this infrastructure is particularly susceptible to flooding and storm surge. Without better elevation data, state transportation agencies cannot identify what infrastructure is at risk and/or in need of redesign.

On a more detailed level, existing storm water control structures such as drains, pipes and retention basins may prove inadequate to handle new patterns of precipitation. Engineering evaluations of such structures will also require high-quality elevation data to model local drainage.

Design standards for roadways, railways, runways, docks and port infrastructure, tunnels, bridges and culverts should also evolve to require consideration of climate change impacts. This effort would likewise require more detailed elevation data.

Ecosystems – Some key estuarine marsh plant communities have a very narrow habitat range in the vertical, often less than 1 meter. (See for example 80% of *Spartina alterniflora* occurring from 0.0 to 0.6 m, cited in: James T. Morris et al. 2005. *Integrating LIDAR elevation data, multi-spectral imagery and neural network modelling for marsh characterization*. *International Journal of Remote Sensing* V26 #23 (December). 5221–5234) Within this range, sea level rise will drastically affect erosion and deposition cycles, sediment/organic material transport, and micro-climate regimes. Most predictions for sea level rise are still within the margin of error for current data, which means that we cannot assess the extent of the resource affected or the possibility of upland migration. Similarly, available elevation data are insufficient to predict the impact of sea level rise on breeding habitat for endangered species.

Non-Transportation Infrastructure – With better elevation data, state emergency response agencies will develop a significantly more detailed understanding of the operational impacts of both sea level rise and inundation on power generation facilities, water and wastewater

treatment plants, communications infrastructure, solid waste disposal and other facilities at risk from increased coastal and river flooding.

A recent study by Applied Science Associates (ASA), combined lidar mapping and survey data in Google Earth to provide visualizations of various sea level rise around the water and wastewater plants, schools and other key infrastructure in the Town of Hull, MA during a (current) 100-year storm. As you can see in the graphic at right, some of Hull's key infrastructure would be underwater in a likely climate scenario. Where we have detailed data, GIS tools allow local and state officials to identify and address critical vulnerabilities – but the data exist for only a handful of communities.



Human Health and Welfare – Presently, we are very limited in the types of pre-disaster planning and real time response to flood events (e.g. neighborhood evacuations) that we can do by the lack of high-resolution elevation data. Lidar data would reduce uncertainty about what locations or neighborhoods were at risk, thus enabling more effective planning and response.

Climate change will have significant effects on local hydrologic cycles through altered precipitation, surface runoff, evaporation, and soil moisture patterns. These changes will lead to altered groundwater recharge in watershed areas, which will change the groundwater flow to coastal regions and thus the rate of saltwater intrusion in coastal aquifers. This is a critical issue for many coastal communities, especially those whose drinking water supplies are sole-source aquifers. More detailed elevation data will enable a much more accurate assessment of what areas might have drinking water problems as a result of climate-related impacts.

Flood Risk Areas - Areas of flood risk are identified in Flood Insurance Rate Maps (FIRMs) based on engineering studies funded by FEMA's National Flood Insurance Program (NFIP). But, as pointed out in numerous recent studies, (e.g. *National Research Council, Committee on Floodplain Mapping Technologies. 2007. Elevation Data for Floodplain Mapping. Washington, DC: The National Academies Press. Exec. Summary 6*) these maps are generally based on poor quality elevation data. They also do not typically reflect changes in land use / land cover which lead to increased runoff from impervious surface. One state (MA) recently geocoded claims for flood damage from a FEMA database and discovered that as many as 30% of flood damage claims lie outside the mapped area at risk. Since floodplain mapping for insurance purposes is based on actuarial principles, using recurrence intervals which are estimated using historical records, and since the basic premise of climate change is that the past can no longer serve as a guide to future climate, the current FIRM maps are of limited utility in developing adaptation strategies.

Current GIS and engineering best practices support a highly automated analysis of flood risk, using HEC-RAS and ArcHydro software -- with inputs of accurate data on elevations and the locations of structures in the floodplain (from lidar) as well as channel bathymetry (one-time

survey). In other words, with high-resolution elevation data, we can readily update floodplain studies to reflect revised probability estimates for duration and intensity of the model storm. In addition, better floodplain mapping is essential for guiding local land-use controls/zoning that prohibits new development in areas at risk. (See for example Oscar Robayo, MS and David R. Maidment, PhD. 2005. *Map to Map: Converting a NEXRAD Rainfall Map into a Flood Inundation Map*. Center for Research in Water Resources, University of Texas / Austin. on-line at <http://www.crrw.utexas.edu/reports/2005/rpt05-1.shtml> (link current 7/2009))

Technical Merit

Data collection plan

We will rely on the vendor(s) chosen through the GPSC-2 process to provide specific details regarding the collection plan, but we have checked with several vendors to see if such a large area could be collected within a 15-month period. The timeline proposed here provides two windows of collection time, Autumn 2010 and Spring 2011. We have been assured by multiple vendors that with 8-10 "assets" (an asset being a plane with a lidar sensor and crew) this is a realistic timeframe. The timeline proposed also provides the vendor plenty of time for data processing and QA/QC, and working with the states.

We will work with the various stakeholders involved in our consortium to determine also the priority of areas for collection. Some regions will need to be done right away to assist with other projects in those areas, while others can wait until the end of the project for collection and processing. The region covers 4.5 degrees of latitude, so climatic differences in the various areas will allow a sliding schedule of lidar collection to meet the leaf-off criteria.

We will follow a data collection timeline that works from north to south in Autumn 2010, beginning in mid-October at the northernmost latitudes and working south until snow accumulates in the southern regions (typically late December). In Spring 2011, data collection will begin in southern areas as early as March 15, pending snowmelt, and proceed north again until about May 20 when trees are leaved out in eastern Maine.

This will provide approximately 90 days of opportunity in Autumn 2010 and 45 days in Spring 2011. Assuming a 1:3 ratio for "good" flying days based on typical weather, and allowing for holidays, that comes to about 32 days of collection available for the project period.

An important consideration in such a large project is keeping a consistent dataset. We will work with the vendor to ensure maintaining records of control points and checkpoints used in each collection so they can be re-used for overlapping or neighboring collections. Also, we will plan some overlap between different vintage datasets so that they can be compared to each other in those areas. As this project also includes gathering of 3526 sq. mi. of existing data, and 1056 sq. mi. of data from FEMA, we will 'blend' the elevation models from these data with the newly collected 8979 sq. mi., to create a seamless bare-earth DEM for the region. For LAS files, we will not attempt to 'blend' old and new point clouds, though we will expect all new data to be edge-matched and seamless.

Some areas within the region are scheduled for orthoimagery collection during this period as well. We will coordinate with these products so the vendor has access to the most recent orthoimagery.

Adherence to the base lidar specification

We propose to collect lidar products which precisely match the base lidar specification provided in the funding program announcement. These details were used with vendors to come up with estimates, and they have been agreed upon by all the stakeholders involved in the consortium. The specifications for the entire project area will match those of the USGS Base lidar specification in Attachment A of USGS Program Announcement 10HQPA0014.

Note: The State of RI (1,045 mi²) has sufficient leverage funds (an additional \$150,000 available) from cooperators to achieve an increase in the horizontal resolution and vertical accuracy above the USGS Base lidar specification and acquire several premium buy-up products (e.g., independent QA/QC, multiple return surfaces, intensity images, tidal coordination/correction). Should this proposal be successfully funded, RI will work with the USGS-designated contractor through a separate USGS Joint Funding Agreement contracting mechanism (e.g., JFA, GPSC-2) to accomplish this. Additionally, a UNH researcher is interested in "buying up" for an area near Newburyport, MA, with \$38,000 available.

Massachusetts may also have an additional \$200,000 available to increase the project area.

Overall technical approach

We have discussed our approach to this project with vendors including 3001, Dewberry, Fugro, MJ Harden, PhotoScience, and Sanborn. We have discussed with these vendors the desired outcomes and the USGS lidar specification, as well as our funding situation, to make sure we were developing a realistic project and budget. The consortium has been clear with communications to each of these companies that we were not selecting a vendor at this time, and our discussions with any vendor in no way constitutes an endorsement or acceptance of that vendor. Also, by relying on the USGS GPSC-2 contracting mechanism, we ensure choosing a vendor which has already been vetted as competent and capable for delivering the desired products. Based on these communications, we strongly believe that:

- The timeframe proposed is realistic for collecting lidar over this area
- The companies available via GPSC-2 are competent, capable, and experienced
- The base USGS lidar specification can be achieved within our budget

The consortium will utilize set goals as performance measurements, to ensure the project is proceeding as planned. These goals will include:

1. Vendor selected by April 1, 2010
2. Detailed scoping and priority information from consortium to vendor April 15, 2010
3. Project officially starts June 15, 2010
4. Project plan required from the vendor by June 20, 2010
5. First acquisitions in Autumn 2010 to include at least 75% of project area by December 31, 2010. Autumn is the best time in the northeast to collect such data, with a longer window and drier conditions than Spring collection windows.
6. First delivery of lidar products by February 1, 2011. Full delivery of Autumn 2010 data by May 1, 2011. Review of data and comments to vendor by June 1, 2011. Finalize data acceptance by July 1, 2011 for first acquisition.
7. Second acquisition in Spring 2011 to complete all of project area acquisition.
8. Delivery of initial second acquisition products by June 1, 2011. Full delivery by July 1, 2011. Review of data and comments to vendor by August 1, 2011. Finalize data acceptance for second acquisition by September 1, 2011.

9. Delivery of final report and all data to USGS by September 15, 2011.
10. Project officially ends September 15, 2011

Overall Qualifications of Applicants

The principal investigators submitting this proposal are the state GIS coordinators for each of the states. As such we are the GIS leaders in our respective states, each of us responsible for:

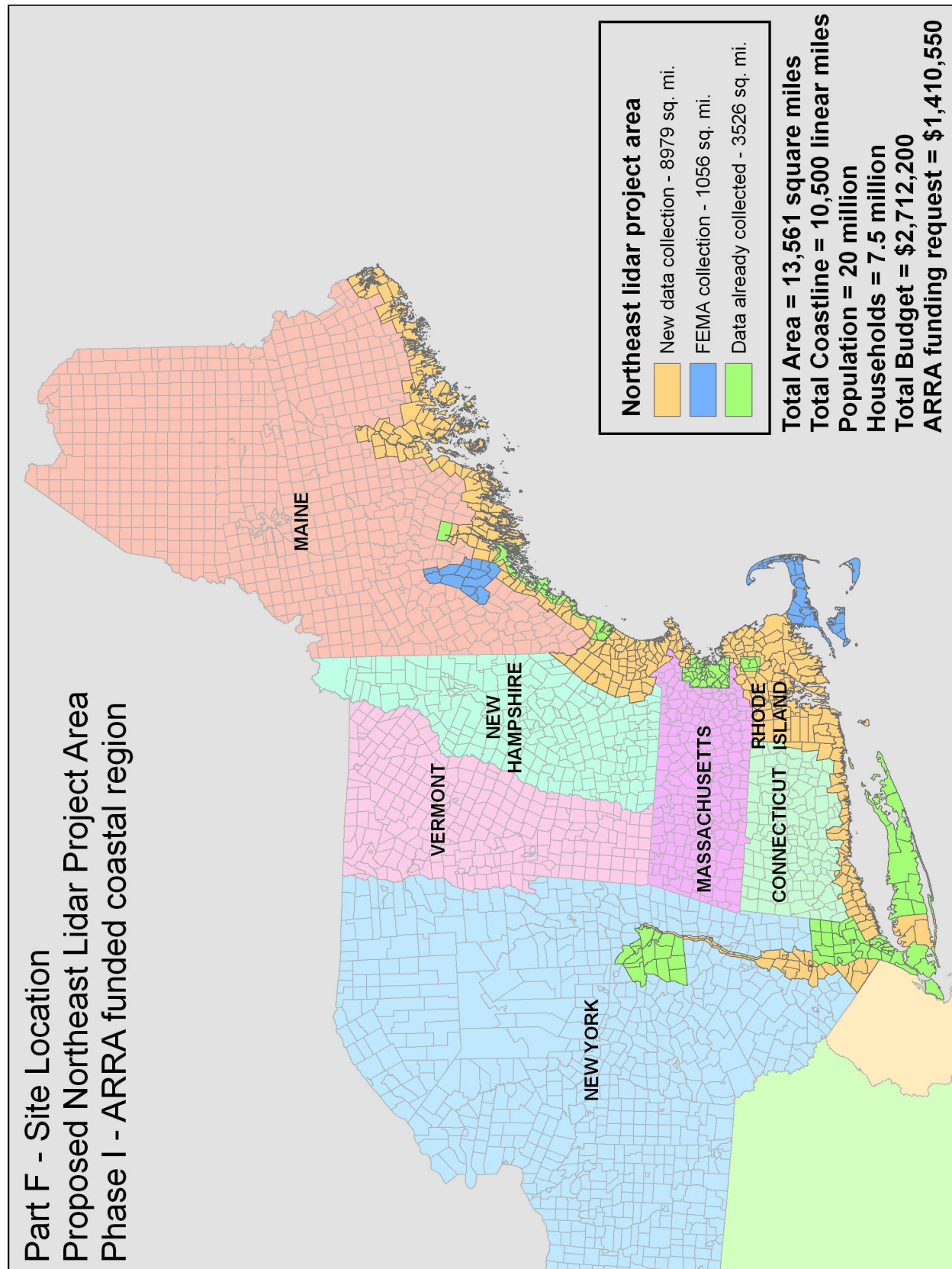
- coordination of GIS projects between federal, state, and local entities
- management of large geospatial data acquisitions including landcover data, orthoimagery, addressing, transportation data, hydrographic data, assessors parcel data, and lidar
- management of a geospatial data clearinghouse and staff, or coordination with a state organization providing this service

Specific project experience includes:

- Maine Landcover and Imperviousness Dataset 2004 - an extension of the USGS National Landcover Dataset 2001, coordinated with USGS, NOAA, and state entities, contracted project to Sanborn, \$320,000.
- Maine orthophoto project 2003-2004 - led a group of stakeholders to develop specifications for a joint USGS/Maine project collecting 1-foot and 2-foot orthos over much of Maine.
- RI Statewide orthophoto acquisition projects 1997, 2003-2004 – RIGIS worked with RIDOT to make these data publicly available
- RI Statewide land use and land cover mapping 1988, 1995, 2003-2004 – RIGIS and RIDOA administered the contract with University of Massachusetts to photointerpret, classify, and digitize. RIGIS provides data distribution through its clearinghouse.
- MassGIS has twice acquired lidar data, once for the Boston Metro area in 2002 and again in 2004 as part of an orthoimagery and LiDAR pilot project in an area adjacent to the City of Brockton, south of Boston. The posting densities of between 0.75 m to 1.5 m and the vertical accuracy (15cm) specifications for these projects meet or exceed those proposed for this current project.
- New York Statewide Digital Orthoimagery Program – 2001-ongoing – project management for coverage of a part of the state each year, partnering with Federal, State, and Local agencies with expenditures totaling over \$21 million to date
- New York LIDAR projects – 2008 and 2009 – over 4000 square miles of 1 to 1.4 meter spacing lidar collection and review in partnership with NYS DEC and NYC, \$1,000,000
- New Hampshire impervious surface mapping - Estimates of impervious surface acreage in 2005 were generated and compared to prior estimates for 1990 and 2000 for a 48-town region in coastal New Hampshire.
- New Hampshire floodplain mapping - GRANIT staff is involved in a range of activities including maintenance of a digital base map inventory, assessment of community mapping needs.
- MassGIS staff have extensive experience in the past nine years with developing specifications for and conducting competitive procurements of statewide spatial data. Besides the above Lidar projects, these include statewide color orthoimagery in 2001 and again in 2005 and statewide land use/cover in 2007/2008.

Facilities available to applicants:

Maine Office of GIS	New Hampshire GRANIT	MassGIS	RIGIS
Connecticut Office of CIO	New York Office CSCIC		



Part G: Principal Investigators CVs

Christian Jacqz

MassGIS
251 Causeway Street, Suite 500
Boston, MA 02114

(617) 626-1056
christian.jacqz@state.ma.us

Professional Experience

1992-Present: Director – MassGIS, Responsibilities include managing a staff of 12 with an annual budget of \$4 million; oversight of data development and application projects; strategic planning for long-term system growth; technical support and training for GIS users throughout the state; coordination and partnership with outside agencies at Federal, state, regional and local levels of government; software and hardware evaluation and procurement; development and promulgation of GIS standards.

Additional Experience

1989-1992 Project Manager, Applications Development Specialist, MassGIS.

1976-1987: Owner/Founder Christian Jacqz Builders, Watertown, MA

1973-1976: Director of Retrofit, Home Energy Centers, Newton, MA.

Major projects:

- Creation of software and infrastructure to provide widespread access to GIS in the state
- Completion of statewide orthophoto layer, land use and numerous other mapping layers
- Design and technical management of build-out analysis for all Mass. cities and towns
- Creation of protected open space inventory & support of major land acquisition efforts
- Creation of database/internet application for statewide biodiversity surveys
- Creation/dissemination of watershed management tools
- Support of wind siting, ocean planning, land conservation, broadband
- Implementation of Web Mapping Services and support of e-government initiative

MassGIS was recently named one of the top 50 GIS sites worldwide. It received a “Best of Breed” award from the Center for Digital Government (2002) and played a key part in EOEA’s Community Preservation Initiative, which received EPA’s Smart Growth Achievement Award in 2002. It was awarded long-term funding by the Information Technology Division to be the lead agency on GIS in the Commonwealth.

Professional Societies/Affiliations/Committees

NSGIC

Education

MS Water Resources/Civil Engineering, Tufts University
BA, Yale University

Fay Rubin

Complex Systems Research Center
Institute for the Study of Earth, Oceans, and Space
University of New Hampshire, Durham, NH 03824

(603) 862-1792
fay.rubin@unh.edu

Professional Experience

1985-Present: Geographic Information Systems Project Director – NH GRANIT System, Complex Systems Research Center. Responsible for the design, development, and maintenance of a geographic information system (GIS) to support planning and resource management applications for the State of New Hampshire. Co-founded UNH Geospatial Technologies Training and Resource Center. Established first University-led Cooperating Technical Partnership (CTP) with Federal Emergency Management Agency (FEMA).

Additional Experience

1988-Present: Geographic Information Systems Consultant

1998-2001: Adjunct Faculty, University of New Hampshire, Dept. of Geography

Current/Recent Projects

Development of the New Hampshire GRANIT (Geographically Referenced Analysis and Information Transfer) System. Source of funding: Consortium of NH state agencies. Integrating Geospatial and Web-Based Technologies to Improve Land Use Planning in Coastal New Hampshire. Source of funding: Cooperative Institute for Coastal and Estuarine Environmental Technology (CICEET).
Statewide Floodplain Map Modernization Management Support (MMMS) Coordination. Source of funding: FEMA.
Development of Digital Flood Insurance Rate Maps (DFIRMs) for Hillsborough and Merrimack Counties, NH. Source of funding: FEMA.
Coordination of Statewide Land Use Data Development Initiative. Source of funding: NH DOT/Community Technical Assistance Program.
Construction of National Hydrography Database for New Hampshire. Source of funding: US Geological Survey, NH Department of Environmental Services.

Relevant Publications

State of New Hampshire Flood Map Modernization Business Plan, 2008
State of New Hampshire Strategic Plan for GIS, 2007
State of New Hampshire Business Plan: For a Geospatial Information Officer, 2007

Professional Societies/Affiliations/Committees

Board Member, ASPRS, NE Chapter, 2009 – present
Advisory Board, NH View, 2007-present
Steering Committee, NH GIS Conservation Collaborative
Co-Founder and Member, NH GIS Advisory Committee
Member and past Board of Directors, URISA, New England Region
GIS Program Advisory Committee, White Mountain Community College, 2008 – present
Public Health Improvement Action Plan, NH Dept. of Health & Human Services, 2008 - present

Education

MA and BA, Economics, University of New Hampshire

Tim Ruhren

New York State CSCIC
30 South Pearl Street
Albany, New York 12207

(518) 474-5212
tim.ruhren@cscic.state.ny.us

Professional Experience

2001-Present: Mapping Technologist 4 - NYS CSCIC. Managed statewide orthoimagery program with deliverables valued at over \$21-million over nine years. Developed partnerships accounting for over \$7-million of funding. Added LIDAR collection to program, accounting for \$1-million in deliverables in first two years. Distributed orthoimagery and other data to numerous Federal, State, and County agencies. Managed GIS data processing staff and emergency response GIS team.

Additional Experience

1998-2001: Mapping Technologist 3, NYS Department of Transportation Albany, NY. Managed Quality Assurance Unit for terrain and planimetric mapping data in Photogrammetry Section Led application development for agency-wide GIS unit.

1993-1998: Mapping Technologist 1, NYS Department of Transportation Albany, NY. Led training and quality control in aerotriangulation unit. Performed analytical research on various possible error sources.

Education

MS, Civil and Environmental Engineering, University of Wisconsin-Madison Madison, WI
Focus on Photogrammetry, Remote Sensing, and GIS

BS, Mechanical Engineering, Rutgers University New Brunswick, NJ
Graduated with Highest Honors

Michael Smith

Maine Office of GIS
State House Station 145
26 Edison Drive
Augusta, ME 04333-0145

(207) 215-5530
michael.smith@maine.gov

Professional Experience

2008-present: State GIS Manager - Maine Office of GIS. Managed GIS operations for state government in Maine, including a staff of 10 and budget of \$1.5M. Developed enterprise GIS technologies for use by state agencies and the public. Oversaw development of GIS applications and databases. Coordinated GIS activities among municipal, private, state, and federal entities. Helped develop state strategic plan.

Additional Experience

1998-2008: GIS Senior Database Analyst - Maine DEP. Managed data and databases for GIS operations in DEP and interacting with enterprise efforts for GIS in Maine. Oversaw collection of statewide landcover/imperviousness data, and satellite imagery.

1996-1998: GIS Specialist - US Fish and Wildlife Service. Developed data and GIS applications to support protection of endangered species and habitats.

1992-1996: GIS Specialist - University of Washington. Developed data and GIS applications to support the Washington Gap Analysis Project.

Current/Recent Projects

Lidar for the Northeast - this project
National Hydrography Dataset - MEGIS is the state steward for NHD
E911/DOT roads conflation - merging to a single roads database
Strategic planning for Maine

Relevant Publications

Smith, M. 2009. *The New England Lidar Initiative*. Northeast ArcInfo User's Group Meeting.
Smith, M, M. Palmer, and A. Brenner. 2006. *Landcover Development*. EIJ 3 v5:16-19.
Smith, M. July 2005. *The evolution of federated GIS in Maine*. ESRI User's Conference.

Professional Societies/Affiliations/Committees

Maine GIS Stakeholders Committee Chair
Maine GeoLibrary Board
National States Geographic Information Council

Education

MS, Wildlife Sciences, University of Washington.

BS, Wildlife Ecology, Texas A&M University

Michael Varney

CT Dept. of IT
101 East River Drive
East Hartford, CT 06108

(860) 622-2462
michael.varney@ct.gov

Michael Varney is the director of IT Security with the Connecticut Department of Information Technology.

DOIT was created in 1997 to make the State of Connecticut a leader in the effective use of technology to improve government operations and provide better services to taxpayers. The Department of Information Technology is working to put technology to its highest and best use throughout state government to improve the administration of state programs and services.

The mission of the Department of Information Technology is to provide quality information technology (IT) services and solutions to customers, effectively aligning business and technology objectives through collaboration, in order to provide the most cost-effective solutions that facilitate and improve the conduct of business for our state residents, businesses, visitors and government entities.

DOIT consists of divisions that including the Office of the Chief Information Officer; Administration, Business Development Divisions I, II and III; Security, and Operations, Network and Distributed Systems.

Mr. Varney is also delegated by CIO Diane Wallace the duties of state GIS Coordinator, which include representing Connecticut in regional GIS initiatives such as this lidar project.

Shane White

RIGIS
1 Capitol Hill
Providence, RI 02908-5872

(401) 222-6483
swhite@doa.ri.gov

Professional Experience

April 2009-present: Supervising GIS Specialist (RIGIS Coordinator)

Additional Experience

2003-2009: GIS Project Manager, City of Worcester

2007: Part-time Professor, Clark University

1997-2003: Senior GIS Project Manager, Fuss & O'Neill

1997: GIS Project Manager, Woodard & Curran

1987-1997: GIS Consulting Manager, ESRI

1986-1987: GIS Technician, Vermont GIS

Education

BA, Geography, University of Vermont

Qualifications

- Career professional with more than 22 years of GIS experience; GISP certification package under review
- Strong working relationships with industry experts throughout New England; NEARC member since 1992
- Coordination experience with federal, state, regional and local government, higher education, non-profits, and private sector
- URISA member; At-large board member of Northeast Chapter (NEURISA)
- Specialization in sustainable GIS database development through business process documentation and enhancement

Skills

- Technical writing (competitive consulting proposals, technical contracts, grant proposals, software user manuals)
- Presentations (ESRI international user conference, numerous NEARC conferences, national Brownfields conference)
- ESRI software (ArcGIS Server, ArcSDE, ArcIMS, ArcGIS ArcInfo, Spatial Analyst, 3D Analyst, Network Analyst, ArcPAD)
- 3rd Party Software (RouteSmart, CrimeView, GPV); Other (Microsoft Office Suite, SQL Server, Pictometry, Crystal Reports)
- Strong and proven prioritization, time management, communication, team building, mentoring, and problem solving skills

Part H: Support Letters

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION I
ONE CONGRESS STREET SUITE 1100
BOSTON, MASSACHUSETTS 02114-2023

November 16, 2009

Marcia K. McNutt, Ph.D.
Director
United States Geological Survey
John W. Powell Federal Building
12201 Sunrise Valley Drive
Reston, VA 20192

RE: New England LiDAR Proposal

Dear Dr. McNutt,

EPA Region 1 strongly supports the New England LiDAR proposal set forth by the New England states to acquire high resolution elevation data, using Light Detection and Ranging (LiDAR). LiDAR will produce topographical data critically needed by the federal government and the states to prepare for such climate-related impacts as sea level rise, precipitation changes and extreme weather events.

While our primary climate change focus is rightly centered now on mitigation strategies, we would be remiss not to develop the support tools that will be needed in the coming years to prepare for climate changes. The federal government and states are investing hundreds of billions of dollars in improvements to our critical infrastructures (e.g., transportation, water), much of it along our coasts and waterways. To avoid costly future infrastructure repairs to our roads, bridges, water supply facilities and treatment plants susceptible to water inundation, we must have available sound information on coastal and flood plain areas vulnerable to sea level rise, flooding and extreme weather events. Many of the Northeast states, regional organizations and a number of municipalities have embarked on high-level workgroup processes to plan for the impacts of climate change. They consistently identify as a significant obstacle to adaptation planning the lack of consistent, high resolution terrestrial elevation data in the Northeast.

The Northeast LiDAR project would significantly advance the ability of states and communities to plan for the impacts of climate change. Regional, state and local stakeholders have all strongly articulated the need for LiDAR, including at workshops held by the Northeast Regional Ocean Council (NROC), which supports LiDAR data collection as a top priority. This Northeast LiDAR project is designed to fill this urgent need. If funded, the proposal would result in a collaborative program initiated and operated by the Northeast states in cooperation with federal partners to develop new, high resolution topographic data for the entire region. New England has a unique opportunity to leverage its intellectual capital and strong cross-state communication channels to complete this project quickly and effectively.

Please feel free to contact us, Region 1's Information Resources chief Michael MacDougall ((617) 918-1941), or Region 1's Laboratory director Michael Kenyon ((617) 918-8317), if you have any questions. We thank you in advance for your support.

Sincerely,

A handwritten signature in black ink, appearing to read "Ira W. Leighton", is written over the word "Sincerely,".

Ira W. Leighton, Acting Regional Administrator, Region 1



United States Department of the Interior
U.S. Fish and Wildlife Service
GULF OF MAINE COASTAL PROGRAM
4R Fundy Rd., Falmouth, ME 04105
Phone: (207) 781-8364 FAX: (207) 781-8369
E-mail: FW5ES_GOMP@fws.gov
<http://gulfofmaine.fws.gov>



November 30, 2009

USGS National Center
12201 Sunrise Valley Drive
Reston, VA 20192

RE: Support for the "Lidar for the Northeast" proposal submitted to the 2009 ARRA grant funding opportunity #10HQPA0014 through USGS

Dear Grants Review Committee:

I am writing to express the U.S. Fish and Wildlife Service's strong support for the Lidar for the Northeast project proposal. The proposed project will provide important datasets for use in biological planning and conservation design for a significant portion of the coastal areas in our region. The project will significantly enhance our ability to plan and prepare for climate change impacts in the Northeast.

As the nation's principle federal conservation agency, the U.S. Fish and Wildlife Service is dedicated to helping reduce the impacts of climate change on fish, wildlife, plants and their habitats. Unfortunately, many of the Service's research and planning priorities are unable to be implemented due to a lack of uniform high resolution elevation datasets. The Service anticipates immediately applying the results of the proposed project for a variety of applications including:

- Evaluating potential sea level rise and storm inundation impacts from expected climate changes to habitats and infrastructure. Lidar datasets will provide the Service with an ability to greatly improve the accuracy of sea level rise and storm surge inundation models. The information will contribute to the development of management tools to direct habitat protection and restoration strategies including shoreline "retreat" plans.
- Conducting landscape scale assessments of shrub habitat heights and densities that are important for birds, particularly during fall migration, and New England cottontail rabbits, a federal candidate rare species. Lidar datasets will dramatically improve the ability of the Service to develop species-habitat models.
- Modeling climate change impacts on instream habitats for species including Atlantic salmon, brook trout and freshwater mussels. Lidar datasets will allow Service staff to examine potential habitat response to future hydrologic conditions.

The Service is committed to working cooperatively with local, state and federal partners on this project. The project provides all of us with an opportunity to acquire and utilize data that is beyond the means of us individually. I trust that the USGS will see this proposal as an excellent investment for conservation of natural resources in New England.

Please don't hesitate to contact me if I can be of further assistance.

Sincerely,

A handwritten signature in black ink, appearing to read 'Stewart Fefer', written in a cursive style.

Stewart Fefer
Project Leader



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Coastal Services Center
2234 South Hobson Avenue
Charleston, South Carolina 29405-2413

November 23, 2009

Michael Smith
State GIS Manager
Maine Office of GIS
145 State House Station
Augusta, Maine 04333-0145

Dear Mr. Smith:

The National Oceanic and Atmospheric Administration (NOAA) Coastal Services Center would like to express support for the U.S. Geological Survey American Recovery and Reinvestment Act proposal submitted by the Maine Office of GIS to collect lidar along the Northeast region's coastal counties. This data collection would provide a uniform, high-quality elevation data set for the coastal counties of Connecticut, Rhode Island, Massachusetts, New Hampshire, and Maine, which will be critical to many coastal applications, including determining impacts from sea level rise and coastal storms, informing community stormwater decisions, enhancing flood maps, and restoring estuarine drainage.

The lidar data collected with funding through this proposal would also be added to our Digital Coast, an information delivery system that serves not only data, but also the training, tools, and examples needed to turn data into useful information. The Digital Coast is designed to play a pivotal role in ensuring the wise use and management of coastal resources. The data collected as a result of the Maine Office of GIS proposal would provide a more comprehensive data set to be used by the coastal resource management community in making better-informed decisions.

Sincerely,

Margaret A. Davidson
Director
NOAA Coastal Services Center



NOAA Coastal Services Center
LINKING PEOPLE, INFORMATION, AND TECHNOLOGY
www.csc.noaa.gov

National Ocean Service • National Marine Fisheries Service • National Weather Service
Office of Oceanic and Atmospheric Research • National Environmental Satellite, Data, and Information Service

From: Nechero, Steven - Fort Worth, TX [Steven.Nechero@ftw.usda.gov]

Sent: Monday, November 23, 2009 9:54 AM

To: Smith, Michael

Cc: Nechero, Steven - Fort Worth, TX

Subject: NRCS NCGC supports the NE LiDAR project

Mike:

Per our conversation last week, I will have our front office send you a letter from NCGC in support of the NE LiDAR project. NCGC is in the process of gathering elevation requirements from our users and we are also holding regional workshops to discuss the integration of high resolution elevation data into business workflow and applications. The East Regional Elevation workshop will be in Greensboro, NC December 8-10, 2009. At the workshop we will discuss the NRCS specifications and priority areas for the East Region. NRCS has an interagency agreement with USGS, Rolla to purchase high resolution elevation products from the Geospatial Products and Services Contract and we would like to contribute \$50,000 towards the NE LiDAR project. It is our understand that some additional funds may be contributed from the NRCS State Offices in the NE. We look forward to working with you on this project.

J. Steven Nechero

Technology Applications Team Leader, NRCS National Digital Elevation Program (NDEP) representative

USDA Natural Resources Conservation Service

National Cartography & Geospatial Center

501 West Felix Street

Fort Worth, Texas 76115

817 509 3366 Office

817 825 2719 Cell



November 13, 2009

U.S. Geological Survey
C/O Michael Smith
Maine GIS
SHS 145, 26 Edison Rd
Augusta, Maine 04333

Subject: Northeast Regional Ocean Council support for Northeast LiDAR

Dear Mr. Smith,

The Northeast Regional Ocean Council (NROC) is a state and federal partnership organization initiated in 2005 to facilitate a coordinated regional approach for addressing New England's priority coastal and ocean management issues. NROC has identified high-resolution LiDAR as a priority data need for New England. A continuous LiDAR dataset for the region is of particular interest to NROC as its members continue to pursue and implement coordinated, inter-state coastal strategies.

Coastal managers need high resolution elevation data to inform critical decisions related to a number of priority issues, including:

- Coastal flooding,
- Storm surge and inundation,
- Sea-level rise,
- Restoration of coastal habitats, and
- Erosion.

As the current NROC co-chairs, we thank you for the opportunity to request that USGS resources be allocated to collect high resolution LiDAR data for the Northeast coastal counties. A continuous LiDAR data set would underpin NROC's efforts for the next decade. Please feel free to contact us if you have any questions regarding this matter.

Sincerely,

Kathleen Leyden, 2009 State Chair
Maine Coastal Program

Melville P. Coté, Jr., 2009 Federal Chair
US EPA, Region 1



The Nature Conservancy in Massachusetts
205 Portland Street, Suite 400
Boston, MA 02114

tel (617) 227-7017
fax (617) 227-7688

nature.org/massachusetts

November 20, 2009

Jim Mauck
Orthoimagery and Elevation Theme Coordinator
U.S. Geological Survey
12201 Sunrise Valley Drive
Reston, VA 20192

Dear Mr. Mauck:

The Nature Conservancy is pleased to offer this letter of support for the Northeast regional proposal seeking American Recovery and Reinvestment Act funds for high-resolution elevation data in coastal counties and communities in the six-state partnership of Massachusetts, Maine, New Hampshire, Rhode Island, Connecticut and New York under USGS award opportunity number 10HQPA0014.

Terrestrial ecoregional assessments by the Conservancy along the eastern seaboard completed in recent years included coastal species and ecosystem targets such as nesting piping plovers, salt marshes and beach-dune complexes. These conservation targets were screened for predicted viability using criteria for size, condition, and landscape context. However, these screenings did not consider climate change impacts, and in particular, the effects of sea level rise. The best available science indicates coastal ecosystems and species throughout coastal New England are at risk of severe degradation and loss due to sea level rise.

The Conservancy shares USGS' priority to collect improved elevation data over coastal watersheds and counties in the northeast. Specifically, we would apply results from new LiDAR analyses to the following applications:

- To improve the accuracy of sea level rise and storm surge inundation modeling to inform upland and coastal adaptation strategies such as land acquisition, nitrogen reduction and restoration over the next decade;
- To allow for consistent, region-wide assessments of the vulnerability and possible resiliency of coastal systems.
- To improve documentation and mapping of habitats we seek to conserve and protect, such as coastal salt marshes;
- To identify low-lying areas for flood-protection and stormwater management planning at the state and municipal level (i.e. New Hampshire's Great Bay Restoration Partnership); and,
- To expand the scope of the Conservancy's work on CoastalResilience.org to the broader New England geography. This interactive, geospatial decision-support framework allows decision-makers to visualize: (a) sea level rise

inundation on their landscapes; (b) the impact of sea level rise on key natural and socio-economic resources; and (c) the outcomes of alternative response actions. Currently, the project is limited to the south shore of Long Island's Suffolk County. However, there is strong interest in Nassau County, New York City, Connecticut and elsewhere in New England in developing this sort of decision-support framework. Fine-scale sea level rise projections can be developed for these areas; funding is available through a number of state and federal sources to implement this project in these landscapes; the lack of LiDAR is the main obstacle. CoastalResilience.org is an invaluable planning tool that should be available to coastal managers throughout New England as wrestle with the need to take action to achieve adaptation to sea level rise and coastal storms. The acquisition of LiDAR is a necessary first step toward doing this.

We also support the overall structure of the current proposal in that it encourages cooperation - both among and between federal agencies, state agencies, and municipalities and non-governmental partners. This cooperation will lead to consistency, short and longer term cost-savings, and a common platform for evaluating the impacts of sea level rise. Along these lines, we are fortunate that some of our Chapters in the region are able to pledge match dollars, including Rhode Island (\$40K), and Maine (\$50K).

Again, we support the northeast proposal (six-state partnership) in its entirety, as a successful award to our region can significantly assist the Conservancy in furthering a series of conservation strategies, while at the same time, providing critical planning information required by other coastal government entities.

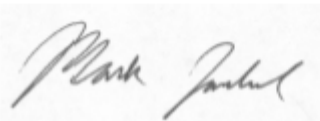
Sincerely,



Wayne Klockner
VP/State Director, Massachusetts Chapter



Michael Tetreault
State Director, Maine Chapter



Mark Zankel
Deputy State Director, New Hampshire Chapter



Kathleen Wainwright
Director for Conservation Programs, Rhode Island Chapter



Lise Hanners, Ph.D.
State Director, Connecticut Chapter



Sarah Newkirk
Program Director, Long Island Chapter



Michael Smith
Office of Information Technology
Maine Office of GIS
145 State House Station
Augusta, Maine 04333-0145
Michael.Smith@maine.gov

13 November 2009

Dear Michael,

We are writing to express our enthusiastic support for the proposed New England / Northeast regional lidar project being led by the consortium of state GIS coordinators, that will be submitted to "The National Map: Imagery and Elevation Maps under ARRA" opportunity. The need for and importance of high-resolution elevation data in New England is well-recognized. We welcome the opportunity to collaborate in meeting this critical need.


As you are aware, the proposed project will enable both short- and long-term planning for hazards assessment, infrastructure investment, and environmental protection, particularly that related to storms and sea-level rise in vulnerable coastal areas. The Woods Hole Science Center has several ongoing research projects that address these themes. Projects that would benefit from the availability of regional lidar data include the National Assessment of Coastal Change Hazards (Task 1, Long-term coastal change hazards using lidar; Task 2, National standardization and compilation of historic shorelines; Task 3, Extreme storm coastal change; and Task 6, Sea-level rise hazards); and High-Resolution Geologic Mapping Offshore of Massachusetts (conducted jointly with the MA Office of Coastal Zone Management). We also participate with other USGS Disciplines and DOI agencies in projects that would benefit, including the Massachusetts Estuaries Project and the Sagamore Lens Yield Analysis Project with USGS WRD, as well as Salt Marsh Elevation Monitoring at Cape Cod National Seashore, conducted jointly with USGS BRD and the National Park Service.

Our Center has identified funds in the amount of \$20,000 that we will allocate to enhancing the proposal, and should be included in your proposal submission package. For


example, these funds could be used to expand spatial coverage, as "buy-up" for higher-resolution data in low-lying regions, or for other aspects of the project as needed.

Please keep us apprised of the proposal's progress, and anything else we can do to assist.

Sincerely,

**Walter
Barnhardt**
Digitally signed by Walter Barnhardt
DN: cn=Walter Barnhardt, o=U.S. Geological
Survey, ou=Woods Hole Science Center,
email=wbarnhardt@usgs.gov, c=US
Date: 2009.11.13 14:38:28 -05'00'

Dr. Walter Barnhardt, Center Director
U.S. Geological Survey
Woods Hole Coastal & Marine Science Center
384 Woods Hole Rd, Woods Hole, MA 02543

**Rob Thieler**
cn=Rob Thieler, o=U.S. Geological Survey, ou=Woods Hole Science
Center, email=rthieler@usgs.gov, c=US
2009.11.13 14:19:04 -05'00'

Dr. Rob Thieler
U.S. Geological Survey
Woods Hole Coastal & Marine Science Center
384 Woods Hole Rd, Woods Hole, MA 02543

Cc: Christian Jacqz, MassGIS, christian.jacqz@state.ma.us

United States Department of Agriculture



Natural Resources Conservation Service
967 Illinois Avenue, Suite #3
Bangor, ME 04401
(207)990-9100, ext. 3; Fax (207)990-9599

November 24, 2009

USGS National Center
12201 Sunrise Valley Drive
Reston, VA 20192

Dear Sir/Madam:

RE: Support of the proposal titled "LiDAR for the Northeast" submitted to the 2009 ARRA grant funding opportunity #10HQPA0014 through USGS.

I am writing in support of the "LiDAR for the Northeast" concept proposal. The 30-meter and 10-meter elevation data currently available are not accurate enough for NRCS site-specific applications. The higher resolution dataset will allow us to improve the quality and accuracy of the services that we provide to our customers and will be an important decision-support tool for planning, designing, and implementing conservation practices

The data would be used in our agency by a variety of specialists, including soil scientists, engineers and conservation planners. Some of the potential applications include, but are not limited to, the following:

Soil Science

- visualization and delineation of landform breaks and landscape patterns
- increased accuracy of slope breaks, soil line and transect placement
- input into soil inference models

Engineering

- dam breach analysis
- stream bank stabilization
- stream cross-section analysis
- cut and fill estimates

Conservation Planning

- wetland restoration
- floodplain mapping/ flood analysis
- calculating sheet and rill erosion

Helping People Help the Land

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Page 2, LiDar Support Letter

- watershed delineation and evaluation
- hydrologic modeling to create runoff curve numbers, flow length and path
- field irrigation
- modeling effects of conservation practices

LiDAR has significant applications for our agency and state, and I strongly encourage funding of this proposal. To demonstrate how valuable LiDAR data will be to NRCS, we are committing \$46,200 to this effort.

Sincerely,



JUAN C. FERNANDEZ
State Conservationist

cc:

Chris Jones, State Resource Conservationist, NRCS, Bangor, Maine
Tony Jenkins, State Soil Scientist, NRCS, Bangor, Maine
Dan Baumert, State Engineer, NRCS, Bangor, Maine
Tara King, Geographer, NRCS, Bangor, Maine



United States Department of the Interior

NATIONAL PARK SERVICE

Acadia National Park
P.O. Box 177
Bar Harbor, Maine 04609

12 November 2009

Mr. Michael Smith
Maine Office of GIS
145 State House Station
Augusta, Maine 04333-0145

Dear Mr. Smith:

I am writing to express National Park Service support for the "*LiDAR for the Northeast*" grant proposal to the US Geological Survey.

If this proposal is funded, the information collected could have many potential uses for Acadia National Park. The project will provide us with additional baseline information on ground and canopy elevations which will better inform park managers about hydrology, viewsheds, potential flooding, habitats, and other topics. The data will be particularly useful to supplement other ongoing research in the park related to hydrological models and atmospheric deposition and new proposals related to adaptation to climate change. We hope it could be used to define intertidal area elevations, as well as those above mean high water, which might clarify jurisdictional areas and ownership in relation to near-shore marine protected areas.

The Park itself has several funding requests pending to help support this project with matching funds, but it is currently too early to say for sure what it may be able to put forward. However, at our request, the NPS's Northeast Temperate Inventory & Monitoring Network, of which Acadia National Park is part, has pledged \$10,000 on our behalf for this project.

Thank you for pulling together this diverse group of cooperators. I wish you all the best luck with this grant proposal.

Sincerely,

Karen B. Anderson
GIS Specialist, Acadia National Park



November 23, 2009

Michael Smith
State GIS Manager
Maine Office of GIS
State Station # 145
Augusta, ME 04330

Dear Mr. Smith,

I am delighted that you have contacted the Tribe with an offer to include us in the proposed lidar project for the Northeast. The tribe has been using ArcGIS for well over 10 years. This proposed project would produce digital mapping data that the tribal GIS program can use for mapping and decision making. It would greatly benefit our GIS program at Pleasant Point and would also benefit many other tribal programs and departments at Pleasant Point. The tribal GIS program often utilizes and downloads spatial GIS data available from the Maine GIS database website. Over the years the MEGIS database has contributed to the enhancement of the tribal GIS and mapping function and has assisted many tribal departments and tribal members with quality information and maps. We do support the LIDAR proposal because it would provide higher quality data to the tribe for use in our GIS and Mapping program. We are always seeking new sources of digital GIS data for our maps. In the past the tribe has contracted a couple of air photography projects for Pleasant Point and tribal trust lands. These flyovers are very expensive and our latest flyover imagery is now outdated (2005). We are in need of updating to new imagery and the proposed project would greatly help the tribe with this update.

The Passamaquoddy Tribe at Pleasant Point is in full support for the proposed lidar project. We stand ready to work collaboratively, if needed, to assist in making this project a success.

Respectfully,


Richard M. Phillips-Doyle
Tribal Governor / Sakom



JOHN ELIAS BALDACCIO
GOVERNOR

STATE OF MAINE
OFFICE OF THE GOVERNOR
1 STATE HOUSE STATION
AUGUSTA, MAINE
04333-0001

November 25, 2009

US Geological Survey
Ms. Marcia McNutt, Director
12201 Sunrise Valley Drive
Reston, VA 20192, USA

Dear Ms. McNutt:

On behalf of the State of Maine, I am writing to pledge my support for the "LiDAR for New England" project which is part of the larger USGS program under ARRA, National Map: Imagery and Elevation Maps. This project is of particular importance to the State in that 5,000 of the 10,000 coastline miles to be mapped are on the coast of Maine. And, data from this project will be applied in multiple ways to assist both public and private entities. For instance, Maine can use this upland data to:

- anticipate and plan for the economic and social impacts to our numerous historic and culturally unique working waterfronts, resulting from a rising ocean level due to climate change;
- tie in with NOAA's benthic LiDAR data to accurately assess subsurface terrain, which will better describe flow patterns that are important to our tidal power projects and aquaculture industry;
- accurately remap the plethora of Maine's coastal floodplains to eliminate the imprecision inherent with conventional maps;
- streamline environmental permitting and support responsible site development decisions so important to Maine's coastal economy;
- improve watershed flooding projections, modeling and planning resulting from ice jams, spring melt-off, and heavy rain, which is essential to our annual flood response efforts.

With Maine's abundant waterways and its beautiful coastline and mountains, we also regularly experience the impacts of risk from flooding, coastal erosion, land slides and other natural hazards. LiDAR data will provide government and industry a critical set of tools that would help Maine better mitigate against and prepare for these risks. It would also give public and private enterprise a unique opportunity to make the best use of our natural resources resulting in a positive economic impact.



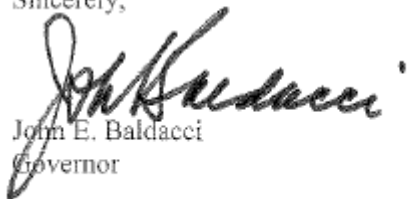
PHONE: (207) 287-3531 (Voice)

PRINTED ON RECYCLED PAPER
888-577-6690 (TTY)
www.maine.gov

FAX: (207) 287-1034

Thank you for your leadership on this important project. The State of Maine joins the other Northeastern States in its commitment to supporting this project. Please contact Maine's Office of Geographic Information Systems (MEGIS) if we can be of further assistance.

Sincerely,

A handwritten signature in black ink, appearing to read "John E. Baldacci". The signature is fluid and cursive, with a large initial "J" and "B".

John E. Baldacci
Governor



Department of Health and Human Services
Maine Center for Disease Control and Prevention
286 Water Street
11 State House Station
Augusta, Maine 04333-0011
Tel: (207) 287-2070
Fax: (207) 287-4172; TTY: 1-800-606-0215

November 4, 2009

Michael Smith
Maine Office of GIS
Augusta, ME 04333

Subject: Maine CDC Drinking Water Program Support for New England Lidar

Dear Mr. Smith:

The Maine CDC Drinking Water Program is working with 2,000 Public Water Systems to assist them in providing safe and reliable drinking water to the people of Maine. One of our ongoing concerns is the vulnerability of public water system facilities to flooding and other extreme hydrologic events. With climatic variability increasing, and with more extreme hydrologic events, we have a business need to access more detailed topographic information so that water systems can design their structures to reduce the risk of damage to critical infrastructure.

High quality Lidar and current orthophoto coverage will assist both the state and water system in planning for and implementing facilities updates that will provide needed resiliency in the face of extreme events. These modifications will result in a long-term reduction in emergency response costs, and also will improve public health and safety by providing safe and reliable drinking water.

Sincerely,

A handwritten signature in black ink, which appears to read "Andrew L. Tolman".

Andrews L. Tolman
Assistant Director, Maine CDC Drinking Water Program

Caring..Responsive..Well-Managed..We are DHHS.



STATE OF MAINE
DEPARTMENT OF ADMINISTRATIVE AND FINANCIAL SERVICES
OFFICE OF INFORMATION TECHNOLOGY
26 Edison Drive
145 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0145
RICHARD B. THOMPSON
CHIEF INFORMATION OFFICER

RYAN LOW
COMMISSIONER

DOMNA GIATIS
DEPUTY COMMISSIONER

April 7, 2009

Mr. Mark L. DeMulder
Chief of Geographic Information Integration and Analysis
National Geospatial Program
U.S. Geological Survey
12201 Sunrise Valley Dr., MS 511
Reston, VA 20192-0002

Dear Mr. DeMulder:

The State of Maine has been working closely with other northeastern states and USGS staff in these states (New York, Connecticut, Rhode Island, Massachusetts, Vermont, New Hampshire, and Maine) to develop a regional approach for LiDAR data collection. We are encouraged by the news that USGS will receive funding to support LiDAR collection, and I wanted to express the importance of this project to our region and the State of Maine.

Currently there are numerous small LiDAR projects which have been undertaken for flood mapping or scientific work, but they cover only a very small part of our region and cannot be joined together in any type of larger project. As the cost of data collection decreases significantly with larger areas, it makes great sense to pool our efforts and use this opportunity to do a large regional project. The northeastern states are working on developing a complete regional coverage for LiDAR, and would like to use this funding opportunity to help with Phase I (proposal attached), which is coastal areas subject to storms and rising sea level. This regional approach is also consistent with looking at the Gulf of Maine as an ecosystem and planning accordingly, and is supported by the directors of all the USGS water science centers in these states.

These data will have a profound positive impact on Maine and the region in a number of ways, including:

- Improvement of floodplain maps to identify at-risk areas more accurately
- Modeling of sea level rise, including identification of at-risk infrastructure
- Snow pack and water runoff modeling to better predict flooding events
- Habitat assessments especially for endangered Atlantic Salmon
- Identification of coastal erosion hazards
- Modeling of air movements key to identifying wind energy sites and modeling air quality
- Landcover and forest modeling

The State of Maine is asking USGS to consider this regional approach and allow for competition of large projects when it makes the LiDAR funding available in the coming weeks. We also request, considering the short timeframe, to require a smaller amount of matching funds and to allow us to be creative in coming up with match funding in these difficult economic times. Thank you for your consideration.

Richard B. Thompson
Chief Information Officer

Phone: (207) 624-8800/(207) 624-9494

Fax: (207) 287-4563
www.Maine.gov

TTY: (207) 629-9015



ELIAS BALDACCI
GOVERNOR

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

November 13, 2009

Mr. Michael Smith
US Geological Survey
26 Edison Dr
Statehouse Station 145

Dear Mr. Smith,

We are happy to provide our enthusiastic endorsement of the northeastern coastal states' proposal to initiate a collaborative effort with USGS, FEMA and other federal partners to develop new, high resolution topographic data for the entire region.

DEP, in response to a legislative resolve in the 124th Maine legislature, is currently working with 100+ stakeholders from the private, public interest, and state agency sectors to develop a plan that will allow Maine to "prepare for and adapt to the most likely impacts of climate change." Among the likely impacts to be addressed are sea level rise in the Gulf of Maine, and the increased prevalence of extreme storm and precipitation events. The effect of these will be increased inundation risk for Maine's built infrastructure, including buildings, drinking and wastewater systems, the transportation network, and emergency response services; and the potential loss of critical coastal ecosystems and the services they provide. Taken together, they place Maine's economy at significant risk that will only increase in the decades ahead.

Since 76% of Maine's population lives and works in the nine coastal counties that could be mapped under this project, the stakeholders have already identified the importance of better mapping of coastal areas as crucial to climate adaptation planning. LIDAR data will be used to identify areas of particular vulnerability so that the state, and its local jurisdictions, can direct limited resources to preparedness in the near term, and the creation of resilience to climate change effects over time.

On behalf of the Bureau of General Services, which has certain responsibilities for state buildings and facilities in the coastal area, and the Bureau of Insurance, which regulates insurance rates paid by home and business owners, both of which are participating in the stakeholder effort, Commissioner Ryan Low and Superintendent Mila Kofman join me in this endorsement. They agree with our assessment that prudent planning for climate change effects in Maine is required in order to avoid significant damage to Maine's economy and the jobs of our citizens, and that better topographic data are urgently needed to that end.

Please feel free to contact me if I can provide additional information in support of this application.

Sincerely,

A handwritten signature in blue ink, appearing to read 'D. Littell'.

David P. Littell
Commissioner



ELIAS BALDACCI
GOVERNOR

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

November 19, 2009

U.S. Geological Survey
ARRA Proposal Review Committee

The Bureau of Remediation and Waste Management in the Maine Department of Environmental Protection would like to commit to funding the Northeastern Coastal States regional LIDAR project in the amount of \$5,000.

This is a follow up to the letter of support written by Commissioner Littell on November 13, 2009 where he explained that the development of new, high resolution topographic data for the region would allow Maine to "prepare for and adapt to the most likely impacts of climate change." Other benefits to DEP will be improved response to marine oil spills and the enhanced ability to investigate and remediate impacted groundwater from oil spills on land, especially in flat coastal regions of Maine.

A handwritten signature in blue ink, appearing to read "George Seel".

George Seel,
Director, Division of Technical Services

A handwritten signature in blue ink, appearing to read "Mark Hyland".

Mark Hyland
Director, Bureau of Remediation and Waste Management



STATE OF MAINE
DEPARTMENT OF
MARINE RESOURCES
MARINE RESOURCES LABORATORY
P.O. BOX 8, 194 MCKOWN POINT RD
W. BOOTHBAY HARBOR, MAINE 04575-0008

GEORGE D. LAPOINTE
COMMISSIOER

November 10, 2009

To Whom It May Concern,

This letter is written in support of the Maine Office of GIS (MEGIS) and other New England agencies in their application for funds for a regional LIDAR project. If funded, this project will provide essential data along the coast of Maine and elsewhere in the region that will further fisheries management and habitat studies that are presently hampered by incomplete and coarse resolution data.

The Maine Department of Marine Resources manages and supports coastal fisheries. This requires a detailed understanding of the complex topography along the coast. As an example of the kind of work we do, we are currently engaged in a coastal rainbow smelt habitat study for which a spawning habitat threats GIS model is being developed. In Maine, the present 10 meter DEM is not adequate but the 1 meter DEM proposed here would make it possible to develop such a model.

Coastal fisheries have long been the backbone of the economy of Maine coast communities. As new tools and data become available, we find that we are better able to manage those fisheries and support the jobs that fisheries provide.

The Maine Department of Marine Resources fully supports application by MEGIS and other agencies in the region. If you would like additional information, please contact me at 207-633-9507.

Seth Barker
GIS Manager
Maine Department of Marine Resources



STATE OF MAINE
DEPARTMENT OF CONSERVATION
22 STATE HOUSE STATION
AUGUSTA, MAINE
04333-0022

JOHN ELIAS BALDACCIO
GOVERNOR

PATRICK K. MCGOWAN
COMMISSIONER

23 November 2009

Mr. Michael Smith
GIS Administrator
Maine Office of GIS
Office of Information Technology

Dear Mr. Smith,

The Maine Department of Conservation (DOC) fully endorses your proposal to the U.S. Geological Survey, "LiDAR for the Northeast." Your proposal focuses this important LiDAR collection effort on the coastal areas of the New England states plus New York. Furthermore, we understand that you developed this proposal in collaboration with your counterparts in these states, and in consultation with the Northeast Regional Ocean Council.

While high-resolution topographic information for Maine's coastal areas from LiDAR is the single most important dataset for updating antiquated flood maps of coastal areas, the data will also be of tremendous benefit to programs administered by my department. Here are some areas where LiDAR data will greatly improve the delivery of services by agencies within my department:

Coastal studies: The Maine Geological Survey is the lead agency in assessing the impact of coastal erosion on our beach systems. These beaches form the foundation of southern Maine's tourist economy, but the current topographic information we have from which to assess the health of the beaches is many decades old. The high resolution LiDAR data will establish a base line of elevations for assessing beach changes over time. The data is also essential to determining the impact of sea-level rise, already seven inches over the last century, and projected to accelerate through this century. Forecasting inundation from sea-level rise, coastal storms, and rare Atlantic tsunamis is an important first step to mitigating these hazards. High-resolution elevation data from LiDAR is essential to this effort.

Forestry: Through processing, LiDAR data can provide information to accurately estimate important forest structural characteristics such as canopy height, stand volume, basal area and above ground biomass. This has tremendous application in assessing forest resources, including determining species mix and age distribution, and in estimating sustainable harvest levels. Additionally, more than 80% of the U.S. population lives in urban areas; urban natural resources and their management can significantly influence human health and environmental quality. LiDAR data would provide better information on urban forest resources and how they are changing, providing for better managed urban forests.

Parks and Lands: Many significant State Parks fall within the area to be covered with the proposed LiDAR survey. These include the State's most important coastal beach State Parks: Ferry Beach, Crescent Beach, Popham Beach, and Reid State Parks. All have very dynamic

MAINE DEPARTMENT OF CONSERVATION
PATRICK K. MCGOWAN, COMMISSIONER

PHONE: (207) 287-2211
FAX: (207) 287-2400
TTY: (888) 577-6690

beach and dune systems. The accurate elevation data from LiDAR will better understanding of beach processes and allow for better management of resources.

Land Use Regulation Commission (LURC) activities: LURC is the planning and regulatory agency for the 10 million acres of Maine that lack organized town government. This includes large areas of eastern Maine as well as many coastal islands. LiDAR will allow LURC to better understand the impacts of sea-level rise in the coastal areas it regulates.

In summary, the proposed LiDAR survey of coastal Maine, the remainder of coastal New England, and coastal New York is an investment that will provide many benefits to my department and the services we provide to the people of Maine.

Sincerely,



Patrick K. McGowan
Commissioner



JOHN ELIAS BALDACCI
GOVERNOR
MG JOHN W. LIBBY
COMMISSIONER

STATE OF MAINE
DEPARTMENT OF DEFENSE, VETERANS AND EMERGENCY MANAGEMENT
MAINE EMERGENCY MANAGEMENT AGENCY
72 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0072

PHONE: 207-624-4400/800-452-8735
FAX: 207-287-3178

ROBERT P. MCALEER
DIRECTOR

November 13, 2009

Michael Smith
Maine Office of GIS
145 State House Station
Augusta, Maine 04333

Mr. Smith:

On behalf of the Maine Emergency Management Agency (MEMA), I am writing to offer unequivocal support for the "LiDAR for New England" project. MEMA's mission is to lessen the effects of disaster on the lives and property of the people of Maine. To most effectively do that, we need the latest tools and the most current data and information available. From an emergency management standpoint, we feel that the results of this project will help Maine on several levels:

- More accurately model and prepare plans for watershed floods resulting from ice jams, spring melt-off and heavy rain.
- Improve our assessment of high risk areas along coastal Maine, which will aid our planning for evacuation areas, routes, and alert notification.
- Prevent and/or settle claims of inaccurate or unmapped areas when base flood elevations are in dispute during mitigation or flood insurance activities.
- Enhance dam safety plans by more accurately modeling damages that would result if any of the 1000 plus dams around the State of Maine were to breach.
- Improve local zoning ordinances and code enforcement, both of which rely on accurate flood plain maps.

Improved mapping through LiDAR will also have an economic impact on our State. Given the imprecision of current flood insurance maps, we're finding that there are homeowners, public facilities, and businesses that appear to be in the flood plain but are not, and others that appear not to be in the flood plain but are. This ambiguity leads to over and under insuring of properties, which has profound economic implications.

Thank you for your leadership on this important issue. The Maine Emergency Management Agency stands ready to partner with you throughout this important endeavor. Please contact us if we can be of further assistance.

Sincerely,

A handwritten signature in black ink, appearing to read "Robert P. McAleer".

Robert McAleer
Director, Maine Emergency Management Agency



Maine State Planning Office

Executive Department

JOHN ELIAS BALDACCIO
GovernorMARTHA E. FREEMAN
Director

November 18, 2009

Ms. Marcia McNutt, Director
USGS National Center
U. S. Department of the Interior
12201 Sunrise Valley Drive
Reston, VA 20192

Dear Ms. McNutt,

I'm writing to reinforce the strong support throughout Maine for the northeastern states' proposal to acquire LIDAR data in response to the USGS ARRA program, *The National Map: Imagery and Elevation Maps*. This proposal will produce data that is extremely important to programs within my agency, the Maine State Planning Office (SPO), to Maine municipalities and ultimately to existing and future residents of Maine. My office recently completed an assessment which documented that all levels of government and the private sector are in need of better, high quality, topographic data that this proposed project will provide.

Specifically, SPO's Maine Coastal Program will use information generated from LIDAR data to carry out needed coastal inundation studies, to improve our state sand dune regulations, and to assist communities in managing shoreland development. Acquisition of this data is also critical to SPO's Floodplain Mapping Program where it will be used to create more accurate floodplain maps. Lastly, the information will help shape Maine's emerging policies on climate change adaptation by helping us to specify areas of future risk from sea level rise. SPO is committing \$5,000 to leverage ARRA funds.

Similar benefits will accrue to all of the states and towns included in the proposal's study area. The level of cooperation exemplified in this multi-state proposal highlights the critical importance of LIDAR data throughout the Northeast

I encourage the United States Geological Survey to approve this proposal.

Sincerely,

A handwritten signature in blue ink that reads "Martha Freeman".

Martha Freeman
Director, Maine State Planning Office

CC: Michael Smith, Director MeGIS



GeoLibrary Board

Maine Library of Geographic Information

<http://www.maine.gov/geolib>

November 2, 2009

To: United State Geological Survey

RE: Support of the proposal titled "Lidar for the Northeast" submitted to the 2009 ARRA grant funding opportunity #10HQPA0014 through USGS

On behalf of the Maine GeoLibrary Board, I want to express our hardy support of the New England lidar proposal. Lidar is very important to Maine due to our strong reliance on working coastlines for economic support. The lobster, shrimp, boating, and fishing industry, along with coastal tourism, represent a tremendous economic resource for Maine's citizens and thousands of jobs. With the continued threat of a rising coastline as a result of climate change, Maine's waterfront communities face many changes which affect their livelihood. Having better data can help plan responses to these changes in a manner which has the least impact on the jobs of coastal Maine residents along our 5400-mile shoreline. As such it is a very wise investment of ARRA funds.

In addition, lidar data in coastal areas would provide inexpensive terrain models for forecasting flooding, delineating watersheds, managing habitat, computing runoff, and even modeling wireless broadband availability.

Finally, the Maine GeoLibrary appreciates the regional scope of this project. Although our focus is in Maine, having a regional dataset that is consistent will be tremendously important for modeling change in the Gulf of Maine.

The Maine GeoLibrary is committing to provide \$20,000 in funding for this project.

We urge you to select it for funding.

Sincerely,

A handwritten signature in black ink, appearing to read 'William Hanson'.

From the desk of the GeoLibrary Board Chair:

William Hanson, Rudman & Winchell

84 Harlow St, PO Box 1401, Bangor ME 04402

Phone: (207) 947-4501

Email: whanson@rudman-winchell.com

A LETTER JOINTLY WRITTEN IN SUPPORT OF THE LIDAR FOR THE NORTHEAST PROPOSAL

November 25, 2009

U.S. Geological Survey
12201 Sunrise Valley Drive
Reston, VA 20192, USA

Re: Lidar for the Northeast

Dear Sir or Madam:

This letter represents support for the proposal, "Lidar for the Northeast." This support is from three agencies representing the Portland, Maine region including: the County of Cumberland; the Greater Portland Council of Governments (GPCOG); and the Portland Area Comprehensive Transportation System (PACTS) our Metropolitan Planning Organization (MPO) for the Portland region.

We lend our support for the "Lidar for the Northeast" proposal submitted to the USGS by the Maine Office of GIS for many reasons. The main reason is that the proposed lidar project would provide location and elevation data at an accuracy that does not exist for the greater Portland region. Our agencies provide many services that rely on, and would be enhanced by, accurate elevation data including:

- Coordination of aerial orthophotos for the region (at 5 year intervals)
- Emergency evacuation planning and mapping
- Corridor planning and mapping
- Regional comprehensive planning and mapping assistance
- Various studies that require 3-D models for line-of-sight and/or view shed analysis.

In addition to the services we provide as regional agencies, we are also advocates on behalf of our regional cities and towns. The lidar project will reduce the costs incurred by our local governments with many of the following tasks: site plan and subdivision review; storm water management; road, culvert and other infrastructure design; natural resource and scenic view protection planning; other planning and development related tasks. Lidar will also reduce the cost of private land development by reducing the costs of preliminary site engineering required for preliminary permitting approval (which may or may not reach final approval).

The region as a whole will benefit greatly from the various important uses for lidar data. We sincerely hope the proposal submitted by the Maine Office of GIS is successful and we appreciate your consideration.

Sincerely,

Neal Allen - Executive Director

Greater Portland Council of Governments

John Duncan - Executive Director

Portland Area Comprehensive Transportation Systems

Peter Crichton - County Manager

County of Cumberland, Maine



www.cumberlandcounty.org





*City
of
Ellsworth*

OFFICE OF THE CITY PLANNER

**1 City Hall Plaza
Ellsworth, Maine 04605
Email: planning@cityofellsworthme.org**

**Phone: 207-667-7469 x137
Fax: 207-667-4908
Website: cityofellsworthme.org**

Michael Smith
Maine Office of GIS
State House Station 145
Augusta ME 04333-0145

Dear Mr. Smith,

The city of Ellsworth supports the Maine Office of GIS and the regional consortium in their application for a LiDAR and orthoimagery collection grant through an ARRA-funded USGS program.

The project would benefit the City of Ellsworth and our neighbors in several ways:

- The availability of current, high resolution imagery would allow for more effective local and regional planning in the areas of land use, transportation, stormwater management, economic development, emergency management and natural resources conservation.
- The availability of better topographical maps would aid in the planning efforts listed above and for the development of municipal infrastructure improvements.
- Enhanced, publicly available data of these types will also help the private sector with lower-cost project planning for local, state and federal permitting to achieve businesses expansion and facility upgrade goals that create more employment.

Although we cannot at this time list any anticipated direct revenue gains or enumerate jobs to be created by this proposal, we do expect that the data will have a positive fiscal effect locally by providing more information to local planning efforts and by streamlining the permitting processes for private economic development projects.

Best regards,

J. E. Fitzgerald,
Deputy Planner, GIS Technician

Cc: Michelle Beal, City Mgr.; Michele Gagnon, City Planner; Janet Toth, Economic Development Coord.

Town of Hampden
106 Western Avenue
Hampden, Maine 04444



Phone: (207) 862-3034
Fax: (207) 862-5067
email: hampden@midmaine.com

November 2, 2009

USGS National Center
12201 Sunrise Valley Drive
Reston, VA 20192, USA

RE: Support of the proposal titled "Lidar for the Northeast" submitted to the 2009 ARRA grant funding opportunity #10HQPA0014 through USGS

Dear Grants Review Committee:

As the Manager of the Town of Hampden, I am writing to express my support for the project proposal "Lidar for the Northeast." The proposed lidar project will be beneficial to towns and cities in Maine, as it will provide much-needed updated elevation data, as well as detailed land cover information. This information is important to land use planning decisions we make every day in our town.

The lidar data will aid in updating flood plain maps, elevation maps, and much more, which are used frequently by our Code Enforcement Officer as he reviews permit applications, by our Town Planner in drafting ordinances, and by our GIS/IT Specialist as she creates and updates maps. Some data layers, such as elevation maps, are over 20 years old.

Towns and cities in Maine can rarely afford to produce their own digital data, and rely heavily on state-produced data through the Maine Office of GIS, the Maine GeoLibrary, or other such sources. The cost-savings to tax payers of doing a project of this scale will be immense, and the resulting products will produce better land use planning decisions due to more accurate information.

Sincerely,

Susan Lessard
Town Manager
Town of Hampden, ME

TOWN OF SWAN'S ISLAND
One Post Office Plaza
175 Harbor Road
Swan's Island, Maine 04685-0011

11 November 2009

Subject: Coastal ARRA LIDAR Project

Over the many years that I have been a Code Enforcement Officer for Swan's Island one recurring problem has been the FEMA flood plain maps for the island. The whole island is Zone A.

We have anywhere from two to five LOMAs per year due to the poorly conceived maps from FEMA. True, if someone does not require a mortgage for a property there is no problem. Because flood plain insurance is so horrendous anyone faced with this problem has to acquire the services of a surveyor to measure and confirm that the property is out of the flood plain despite what the maps shows.

A good example of how bad these maps are - my neighbor has a house on a 35 foot bluff , yes it is about 80 feet from the shorefront, the grey area for the flood here is 50 feet in back of this house. This is not an isolated case of a dwelling being high in the air but inside the grey flood area on the map.

I have discussed this with the State of Maine Floodplain office many times and the only response I receive is that 'the engineers must be correct'.

We expect that this LIDAR project will , once and for all, eliminate this unnecessary need to produce LOMAs every time a "problem" arises.



Ronald H Rowland
CEO Swan's Island

Town of Windham

Planning Department
8 School Road
Windham, ME 04062

voice 207.894.5960 ext. 2

fax 207.892.1916

November 4, 2009

Mr. Michael Smith
Maine Office of GIS
State House Station 145
Augusta, Maine 04333-0145

Re: LiDAR for the Northeast

Dear Michael,

I am writing to express support for the "LiDAR for the Northeast" concept proposal being submitted by the Northeastern states, United States Geographic Survey (USGS) and Federal Emergency Management Agency (FEMA) for American Recovery and Reinvestment Act (ARRA) funding.

The LiDAR for the Northeast project would provide high resolution digital elevation models from which the Town could develop 2 foot contour intervals. Based on current estimates, contour intervals produced by a photogrammetrist using locally flown aerial photography is too expensive. The LiDAR data would enable the same photogrammetrists to produce contour intervals at a price that is within the Town of Windham's fiscal means.

The Town currently relies on 20 foot contours provided by the USGS. These contours are not sufficient for many of the planning functions the Town's Geographic Information System is capable of performing. These include, but are not limited to, the following:

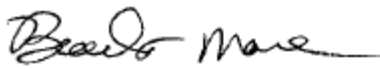
- Providing detailed elevation context to two dimensional aerial photography and property tax maps,
- Assisting with the review and analysis of site plan and subdivision applications (particularly the review of stormwater management and erosion control)
- Planning for the layout of proposed street rights-of-ways without the need for costly initial surveying,
- Watershed management planning,
- Comprehensive planning for the protection of important natural features such as streams, ponds, view corridors and wildlife areas.
- Provision of data to developers that may be used for the production of "sketch plans" without the need for initial surveying

www.windhamweb.com

The Town of Windham would hire a consultant to use the LiDAR model for the production of the two (2) foot digital contour intervals. Thus, the ARRA funding would leverage additional municipal funding that will be spent on private sector consultant services. A photogrammetrist based in Maine estimates that the production of contours for the Town would be \$25,000.00. This is half of the cost of producing the same contours from aerial photography. In summary, the ARRA investment can be a catalyst for the production of valuable information, through the use of a private sector consultant, that would not happen without the requested federal funding.

We appreciate consideration of the LiDAR for the Northeast proposal. We hope that our support demonstrates several of the valuable impacts this funding will have at the local government level. If you have any questions, please contact me at your convenience.

Sincerely,

A handwritten signature in black ink, appearing to read "Brooks More", with a stylized, cursive script.

Brooks More, AICP
Director of Planning



Hancock County Planning Commission

a voluntary association of governments

395 State Street, Ellsworth, ME 04605
(207) 667-7131 Fax: (207) 667-2099
hpc@hpcme.org • www.hpcme.org

Amherst
Aurora
Bar Harbor
Blue Hill
Brooklin
Brooksville
Bucksport
Castine
Cranberry Isles
Dedham
Deer Isle
Eastbrook
Ellsworth
Franklin
Frenchboro
Gouldsboro
Great Pond
Hancock
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Mount Desert
Orland
Osborn
Otis
Penobscot
Sedgwick
Sorrento
Southwest Harbor
Stonington
Sullivan
Surry
Swans Island
Tremont
Trenton
Verona Island
Waltham
Winter Harbor

Dick Thompson
Office of Information Technology
State House Station 138
Augusta, ME 04333-0138

October 30, 2009

Dear Mr. Thompson:

This is a strong letter of support from the Hancock County Planning Commission (HCPC) for the LIDAR mapping proposal for the Northeast, which is being coordinated in Maine by the Maine Office of GIS. This project would be of enormous benefit to Hancock County and the end products would enhance the mapping capacity of the HCPC to provide services to its communities. Specifically, it would help us not only with county-wide endeavors to plan for sea level rise, but also with site-specific projects such as planning the location of roads and trails.

Feel free to contact me at 207-667-7131 (e-mail: tmartin@hpcme.org) if I may be of any further assistance.

Sincerely,

Thomas E. Martin, AICP
Executive Director

c: Mike Smith, Maine Office of GIS
Joseph Young, Maine State Planning Office
Dan Walters, USGS Maine Office
The Honorable Governor John Baldacci

Timothy Nelson, President
 A/E, Plumbing Inspector
 Town of Falmouth
 P.O. Box 46
 East Waterboro, ME 04043
 Tel: 247-5966
timel@securespeed.us

Richard Lambert, Vice President
 CEO, City of Saco
 300 Main Street
 Saco, ME 04072
 Tel: 284-6963 Fax: 282-8202
rlambert@sacomaine.org

Jodine Adams, Secretary
 CEO, Town of Wells
 P.O. Box 398
 Wells, Maine 04090
 Tel: 646-5188
jadams@wellstown.org

Barbara Skelton, Treasurer
 CEO, Town North Yarmouth
 10 Village Square Rd
 No. Yarmouth, ME 04097
 Tel: 829-3705
codeoffice@northyarmouth.org

Albert Farris, Director
 CEO, Town of Falmouth
 271 Falmouth Road
 Falmouth, ME 04105
 Tel: 699-5310 Fax: 781-8677
afarris@town.falmouth.me.us

Paul Demers, Director
 CEO, Town of Kennebunk
 1 Summer Street
 Kennebunk, ME 04043
 Tel: 985-2102 ext.1311 Fax: 985-4609
pdemers@kennebunkmaine.us

Dabney Lewis, Director
 CEO, Town of Boothbay Harbor
 11 Howard Street
 Boothbay Harbor, ME 04538-1010
 Tel: 633-3671 Fax: 633-7712
dabney@boothbayharbor.org

Michael Nugent, Director
 CEO, Town of Old Orchard Beach
 1 Portland Avenue
 Old Orchard Beach, Maine 04064
 Tel: 934-5714
mnugent@oobmaine.com

Kathryn Joiner, AIBD, Director
 Joiner Design Co.
 475 Pleasant Street, Suite 27
 Lewiston, ME 04240
 Tel: 783-7021
kjoiner@megalink.net

Freeman Abbott, Director
 CEO, Town of Gorham
 Municipal Center, 1 South St., Suite 1
 Gorham, ME 04038
 Tel: 222-1605 Fax 839-4793
fabbott@gorham.me.us

Bruce Smith, Director
 CEO, Town of Cape Elizabeth
 P.O. Box 6260
 Cape Elizabeth, ME 04107-0060
 Tel: 799-1619 Fax 799-5598
bruce.smith@capeelizabeth.org



Maine Building Officials and Inspectors Association, Inc.

60 Community Drive, Augusta, Maine 04333

November 20, 2009

Michael Smith, Manager
 Maine Office of GIS
 State House Station 145
 Augusta, Maine 04333-0145

RE: LiDAR Project

Dear Mr. Smith:

We understand that the State of Maine, in cooperation with several other Northeast states, is planning to apply for a Federal grant to begin a collaborative program to develop new, high resolution topographic data for the entire region. The program, when completed, will provide topographical data that will meet the basic National Map and FEMA needs for all of the coastal counties in the Northeast including all or portions of 11 counties in the State of Maine. We support this effort as we believe the data will assist local municipalities in many areas including flood inundation areas, evacuation planning, cell phone tower placement and accurate resource protection zoning studies.

As Code Enforcement Officers, we sometimes find ourselves at a disadvantage when attempting to make determinations based on data that is inaccurate or at a scale that is completely useless. We believe that this project, when completed, will provide us with an additional tool to make accurate and legally defensible determinations on pending development applications.

Thank you for allowing us to express our views on this matter.

Sincerely,

Richard G. Lambert
 Richard G. Lambert
 Vice President, MBOIA

C: Joseph Young, Maine State Planning Office



November 24, 2009

Mr. Jim Mauck
Orthoimagery and Elevation Theme Coordinator
U.S. Geological Survey
12201 Sunrise Valley Drive
Reston, VA 20192

Dear Mr. Mauck,

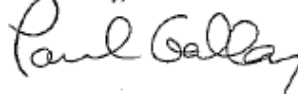
Maine Coast Heritage Trust is pleased to send this letter of support for the Northeast regional proposal seeking American Recovery and Reinvestment Act funds for high resolution elevation data in coastal counties and communities in the six-state partnership of the New England states., under USGS award opportunity number 10HQPA0014.

Maine Coast Heritage Trust is a state wide land conservation organization that focuses on the entire coast of Maine. We work with private, municipal, state and federal partners on conservation and community projects. We also manage coastal lands. The impacts of sea level rise will have profound impacts on our work and our partners.

Improved information that would be available as a result of a new LiDAR analysis will enhance our ability to do our work, and will also be extremely useful to our many partners. The cooperative nature of the current proposal is vital to the continuation of the excellent working relationships that exist between government and non-governmental organizations.

To help with this effort, we are pleased to pledge \$20,000 in match dollars and look forward to being able to use the resulting data to further our work and that of our many partners.

Sincerely,



Paul Gallay

cc: Mike Smith



ISLAND INSTITUTE

386 MAIN STREET • POST OFFICE BOX 648
ROCKLAND, MAINE 04841-00648
TEL 207-594-9209 FAX 207-594-9314
www.islandinstitute.org

November 23, 2009

Island Institute
PO Box 648
386 Main Street
Rockland, ME 04841

To Whom It May Concern:

The Island Institute is pleased to write in support of the Northeast LiDAR collaborative proposal to provide high resolution topographic data for the entire coastal Northeast region.

The Island Institute is a non-profit organization that serves as a voice for the balanced future of the islands and waters of the Gulf of Maine. Through this role the Island Institute seeks to support Maine's year-round island communities; conserve Maine's island and marine biodiversity for future generations; develop model solutions that balance the needs of the coast's cultural and natural communities; provide opportunities for discussion over responsible use of finite resources; and provide information to assist competing interests in arriving at constructive solutions.

Our island and coastal constituents are grappling with questions of climate change and related sea level rise scenarios. Better information is needed to inform local, and regional planning to help better predict potential future sea level rise, as well as to inform decision-makers, resource managers, and coastal residents interested in understanding potential changes within their communities and the impact those changes may have on their local natural resources, coastal infrastructure, and fishing-based economies.

The Northeast LiDAR collaborative proposal would provide critical data to help answer some of these questions, and vastly improve the quality of topographic information that is currently available in coastal Maine.

Sincerely,

Shey Conover
Senior Programs Director, Island Institute



November 24, 2009

Mr. James Mauck
Orthoimagery and Elevation Theme Coordinator
U.S. Geological Survey
12201 Sunrise Valley Drive
Reston, VA 20192

Dear Mr. Mauck,

Friends of Casco Bay is in support of efforts in the Northeast, particularly in Maine, to use American Recovery and Reinvestment Act funds to acquire high resolution elevation data (Light Detection and Ranging Data or LIDAR) for coastal towns and watersheds.

Friends of Casco Bay is a marine stewardship organization founded to improve and protect the environmental health of Casco Bay. Formed by concerned citizens in 1989, Friends of Casco Bay works in scores of collaborative efforts with town governments, state and federal agencies, academics, concerned citizens, other scientists, and other nonprofits to protect the health of the Bay.

We foresee using LIDAR data directly and indirectly through collaborative partnerships. The higher resolution elevation models generated through LIDAR may allow us to examine or predict various scenarios, such as comparing the impacts of a range of forecasted heights in sea level rise. We may extrapolate a range of impacts from sea level rise on coastal habitats, such as the inland migration of salt marshes and the movement of eelgrass beds. LIDAR models may help us analyze how shoreline development and impervious surfaces may inhibit the landward extension of these coastal habitats. LIDAR information will also assist with the identification of erodable bluffs, predictions about the vulnerability of sewage treatment facilities and other critical water quality and public infrastructure to sea level rise and storm surges, and possibly the identification of new threats to water quality in Casco Bay.

Maine enjoys over 5,000 miles of coastline. LIDAR data will be critical to the state's ability to predict, plan, and respond to a variety of impacts of sea level rise. An award of funds to the state for this purpose will greatly strengthen our collaborative partners' abilities to work together in protecting a sweeping array of Maine's coastal interests.

Sincerely,

Cathy L. Ramsdell, CPA
Executive Director, Friends of Casco Bay / Casco Baykeeper

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Executive Director

Cathy L. Ramsdell CPA, Portland

Casco BAYKEEPER

Joseph E. Payne, Westbrook





Wells National Estuarine Research Reserve

Research • Education • Stewardship

3 November 2009

United States Geological Survey
c/o Michael Smith, Manager
SHS 145, Maine Office of GIS
Augusta, Maine 04333

Dear Michael:

Thanks for sharing your draft proposal to collect high resolution topographic data for the New England region. The LiDAR topographic mapping and data processing you propose will fill a critical gap in our efforts to manage coastal watersheds and tidal habitats in the Seacoast region of Maine and New Hampshire (Seabrook, NH to Cape Elizabeth, ME), and to track coastal wetland response to sea level and climate change in this region and also in Maine's Casco Bay region (Cape Elizabeth to Harpswell). The data and information would provide an invaluable resource for our coastal research, outreach, stewardship and ecosystem-based management programs. We and our partners would apply these data most specifically to our work on:

- 1) Lagrangian circulation modeling of Seacoast estuaries and nearshore waters,
- 2) site selection and performance assessment of estuarine and coastal watershed restoration projects, including invasive plant control
- 3) tidal wetland ecological and geomorphological response to sea level rise,
- 4) shoreland protection and conservation,
- 5) land-cover classification, and
- 6) spatially explicit models of land-use impacts on aquifers.

These aspects of our programs at the Wells National Estuarine Research Reserve, and the work of program collaborators (colleagues within the National Reserve System, the University of Maine, University of Southern Maine, University of New Hampshire, Brown University, and Dartmouth College) will be greatly enhanced regarding the utility of the ecosystem-based management products delivered.

We will be more than happy to assist your effort in any way we can, so be sure to let us know what we can do to help make this proposed work a reality.

Best regards,

A handwritten signature in black ink, appearing to read "Michele Dionne".

Michele Dionne, Ph.D.
Research Director



Maine GIS User Group is a non-profit organization dedicated to the promotion and education of GIS in Maine

November 20, 2009

To: US Geological Survey

RE: Support of the proposal titled "LiDAR for the Northeast" submitted to the 2009 ARRA grant funding opportunity #10HQPA0014 through USGS

On behalf of the Maine GIS User Group, I would like to express our support of the "LiDAR for the Northeast" proposal. The Maine GIS User Group (MEGUG) is a non-profit organization that promotes awareness of and encourages the coordinated development and effective use of geographic information and related technologies. MEGUG focuses its efforts in the areas of policy, liaison and networking, research, education, and public relations. The Group facilitates discussion and exchange of information and ideas in these areas by hosting regular meetings, workshops, and roundtables open to both members and non-members. As a result, the improved data acquired as part of "LiDAR for the Northeast" would be widely utilized by our membership and would certainly be promoted at our regular meetings, workshops, and roundtables.

LiDAR data is very important to our membership due to the group's wide spectrum of GIS interests in Maine. Our membership is comprised of GIS professionals as well as novices in the private, public, and nonprofit sectors. We are diverse in our uses and applications of GIS, but share a similar need for an accurate digital elevation model, as well as detailed land cover information both needs clearly identified in the earlier Maine GeoLibrary user survey. The "LiDAR for the Northeast" proposal is directly in line with MEGUG's mission and the needs of the group's membership. At recent workshops, members have presented their work on such issues as watershed delineation, emergency response planning, ice flow and flood modeling, sustainable land use planning and much more. We have already seen LiDAR being used by FEMA for hazard mitigation and recovery in flood impacted areas in Northern Maine with the possibility of data sharing with Canadian efforts in the same region and many of our members have reported that collaborative efforts and new working relationships have been a product of attending our meetings and participating in these presentations. We anticipate that this proposal, if funded, would lead to a significant increase in these types of collaborative projects that our members could take on with the help of updated elevation data and the other end products one can derive from LiDAR.

Sincerely,

Aimee Dubois, Vice Chair

MEGUG Board of Directors

Dan Walters, US Geological Survey, MEGUG Chair
Aimee Dubois, Town of Scarborough, MEGUG Vice Chair
R. Michael White, Dirigo Spatial Systems, MEGUG Secretary
Steve Harmon, Freelance GIS Professional, MEGUG Treasurer
Vinton Valentine, University of Southern Maine, MEGUG Education Coordinator
Bridgit Kirouac, Maine Office of GIS, MEGUG Member at Large
Ken Murchison, Northern Maine Development Corporation, MEGUG Member at Large
Mike Smith, Maine Office of GIS, MEGUG Member at Large
Steve Weed, Town of Bar Harbor, MEGUG Member at Large

Maine GIS User Group | PO Box 958 | Windham, ME 04062 | www.megug.org

TO: UNITED STATES GEOLOGICAL SURVEY

DATE: November 5, 2009

**RE: SUPPORT OF THE "LIDAR FOR THE NORTHEAST"
PROPOSAL SUBMITTED TO THE 2009 ARRA GRANT FUNDING
OPPORTUNITY #10HQPAA0014 THROUGH USGS**

As President of the Maine Real Estate and Economic Development Association (MEREDA), I fully support the New England LIDAR proposal. Our interest and participation in real estate development projects would be greatly enhanced by having better data to share with prospective investors. Better data can also assist Maine shoreline communities in planning their economic future. Climate change will greatly affect waterfront communities, not only within the fishing and tourism industries, but also to the real estate properties affected by a rising coastline.

The regional scope of the LIDAR proposal, the ability to provide terrain modeling for forecasting floods and air movement modeling for wind farms and cell tower placement are all helpful instruments for economic development and for real estate needs. This data set is very important to our region and I urge you to select this project for funding.

Sincerely,



Raymond J. Cota, Jr.
President
Maine Real Estate and Economic
Development Association

**MAINE ASSOCIATION OF REALTORS®**19 Community Drive • Augusta, ME 04330 • Phone: (207) 622-7501 • Fax: (207) 623-3590 • E-Mail: info@mainerealtors.com

November 23, 2009

U. S. Department of the Interior
Ms. Marcia McNutt, Director
USGS National Center
12201 Sunrise Valley Drive
Reston, VA 20192

Dear Ms. McNutt,

The Maine Association of REALTORS supports the multi-state application to acquire LiDAR data for the New England region, including the Maine coast. Utilization of the best available technology to produce the most accurate data possible will enhance planning and decision making in many areas including climate change research, economic and community development, transportation planning, and floodplain mapping, just to name a few.

Land use decisions dramatically affect people's lives and economic well-being. It is essential that the best and most accurate information available be used to make those decisions. Over the past few months, this Association has participated in several stakeholder group meetings that are considering the issue of climate change adaptation. A constant thread that runs through the discussions is the need for more accurate data on which to base recommendations. The use of inaccurate or outdated information seriously hinders and diminishes any reasonable attempt to plan adaptation strategies.

We in the real estate community have experienced first-hand the effect that inaccurate data can have. Many real estate closings have been delayed, even lost, due to inaccurate floodplain mapping, and the subsequent misinterpretation by insurers and lenders regarding flood insurance. We have highlighted the need for better mapping for many years, and are pleased that this New England initiative is happening.

This project is very important to the people of Maine, and the Maine Association of REALTORS encourages the United States Geological Survey to approve this proposal.

Sincerely,

A handwritten signature in black ink, appearing to read 'Cynthia B. Butts'.

Cynthia B. Butts
Chief Executive Officer
Maine Association of REALTORS



15 November 2009

To: The United States Geological Survey

Re: LIDAR for the Northeast

The purpose of this letter is to convey James W. Sewall Company's strong support for the proposed LIDAR for the Northeast project. Sewall understands that this project would involve LIDAR mapping for the entire Atlantic shoreline from Manhattan, NY, to Eastport, Maine, improving vertical mapping accuracies from the current 10' average to 15cm.

As New England's oldest and largest mapping and geospatial firm, Sewall has long been aware of the need for improved vertical accuracies in this region. Indeed, several of our coastal municipal clients have suffered materially from insufficiently accurate data that would allow them to plan adequately for flooding and other environmental issues.

The LIDAR for the Northeast project will provide timely and critical data to improve the information available to all key stakeholders, both public and private. This improvement will quickly translate to the ability for all stakeholders to provide better services to their constituents. It will also reduce costs for data development by Sewall and other companies, thereby reducing costs to our clients as well. Finally, having more accurate data available increases the opportunities to develop more and better geospatial information, thereby increasing employment opportunities in this critical field.

Please don't hesitate to let me know if I can provide further information concerning this project.

Sincerely,

Dr. James H. Page, CEO

Offices nationwide
sewall.com

136 Center Street
P.O. Box 433
Old Town, Maine 04468

207 827 4456
fax: 207 827 3641
800 648 4202

SPATIAL ALTERNATIVES, INC.

Michael Smith
Maine Office of GIS
State House Station 145
Augusta, ME 04333-0145
November 20, 2009

Dear Michael,

Spatial Alternatives enthusiastically supports the LIDAR for the Northeast proposal. The project is designed to collect LIDAR data for the coastal communities in the Northeast. This important data is invaluable to our work with local governments.

Spatial Alternatives, Inc. is a small business providing GIS services to a variety of clients, the majority being municipal governments. We specialize in assisting towns with planning and visualizing future outcomes of various policy changes with regard to land use. In this capacity, detailed topographic data can be very important. We are currently working on Comprehensive Plans for two island communities and if we had better topographic data, we could answer some of their questions regarding issues such as sea level rise and inundation. We also work with towns trying to assess the visual impact of various development proposals; this work would be greatly enhanced by more accurate data.

Given the number of inquiries we have received over the last year about this type of data, I believe that if it existed, we would be able to fulfill some of the built up demand. We are a small business and having access to this type of data would likely help us to retain the employees we currently have and hopefully to expand our workforce.

We believe that this opportunity will enhance the market for GIS throughout the Northeast as well as provide increased opportunity for local governments to analyze and interpret their own regions.

Sincerely,



President, Spatial Alternatives



November 16, 2009

Michael Smith, Manager
Maine Office of GIS
State House Station 145
Augusta, Maine 04333

RE: USGS stimulus funding for this project

Dear Mr. Smith:

On behalf of the 31 member banks of the Maine Association of Community Banks, I am pleased to write this letter of support for the North Eastern States application to the USGS for high resolution topographic data.

The Maine Association of Community Banks is a state-wide, trade organization representing the interests of all financial institutions in Maine. The Association advocates for the industry, facilitates communication among its membership and provides educational, training and regulatory services. In Maine, nearly 7000 bank employees serve the citizens and businesses from 550 locations.

Our members understand and appreciate the value of accurate flood map data and this data is key to producing accurate and reliable floodplain map data. Additionally, all lenders have regulatory oversight by state and federal bank examinations and our ability to meet the expectations of those exams is contingent upon current flood maps. We believe that if approved, this proposal would help to greatly improve the accuracy of the maps.

The Maine State Planning Office has been instrumental in developing this proposal that would set in motion a collaborative program initiated and operated by the Northeast states in cooperation with USGS, FEMA and other federal partners to develop new, high resolution topographic data for the entire region. We are hopeful that the USGS will support the northeastern states collaborative efforts and provide full funding for this project.

Sincerely,

A handwritten signature in black ink, appearing to read "Chris Pinkham".

Christopher W. Pinkham
President

(207) 791-8401
pinkhamc@mecb.com



UNIVERSITY OF MAINE AT MACHIAS

Environmental and Biological Sciences

Tora Johnson, Director
Geographic Information Systems Laboratory and Service Center

9 O'Brien Avenue
Machias, Maine 04654
207-255-1200
Fax 207-255-1390
<http://www.ummmaine.edu>

November 16, 2009

U.S. Geological Survey,

As director of the Geographic Information Systems Laboratory and Service Center at the University of Maine at Machias, I am writing to express our support, and that of our many regional partners, for the proposed multi-state regional lidar project.

The university's GIS Service Center provides mapping and GIS analysis services at low or no cost to area municipalities, regional planning organizations, and non-profits who would otherwise lack such capacity. Recent service center projects have included regional conservation planning analysis, scenic resource inventories, shoreland zoning maps, and parcel digitization for local municipalities. Lidar data would add a great deal of precision to such projects, allowing us to answer questions we are currently unable to address.

The Downeast Region hosts unique, complex and fragile ecosystems, communities and economies, all of which face major changes in the coming years. The area is home to many of rare and endangered species, as well as critically important habitat. Endangered Atlantic salmon return each year to spawn in the region's rivers, and a host of migratory birds of mountain, shore and field glean critical sustenance from the rare bogs, marshes and coastal forests. Downeast farmers harvest most of the world's wild blueberries, and the region welcomes tourists as one of the few stretches of wild coastline left on the eastern seaboard. Petroglyphs carved into stones along the area's bold coast by native people thousands of years ago are lapped by icy waters, while fishing folk harvest fish, shrimp, lobsters, shellfish and worms on coastal waters and mudflats.

We require more precise data, particularly elevation data, to better analyze and understand how phenomena like climate change might impact these resources and communities. The proposed lidar project would provide the needed data, an important tool in meeting these challenges. For this reason, we urge you to fund this proposal.

Please note the list below of our partners who have expressed their support for the acquisition of lidar data for the Downeast Region of Maine. Thank you for your consideration.

Sincerely,


Capt. Tora Johnson, B.S., M.Phil.

These partners have expressed their support for the proposed lidar project:

- Washington County Council of Governments
- Washington County Emergency Management Agency/ Regional Communications Center
- GIS Laboratory, College of the Atlantic
- Maine Coast Heritage Trust
- Maine Sea Grant
- Island Institute
- Downeast Coastal Conservancy
- Sunrise Trail Coalition
- Pleasant River Wildlife Federation
- Frenchman Bay Conservancy
- Downeast Salmon Federation
- Downeast Resource Conservation & Devel.
- Project SHARE- Salmon Habitat & River Enhancement

Biology

Environmental Studies

Marine Biology

A Member of the University of Maine System

Senator George J. Mitchell Center
for Environmental and Watershed Research



5710 Norman Smith Hall
Orono, Maine 04469-5710
Tel: 207-581-3244
UMGM@maine.edu
www.umaine.edu/waterresearch

November 2, 2009

USGS National Center
12201 Sunrise Valley Drive
Reston, VA 20192, USA

RE: Support of the Maine Library of Geographic Information proposal titled "Lidar for the Northeast" submitted to the 2009 ARRA grant funding opportunity #10HQPA0014 through USGS

Dear Grants Review Committee:

As the Research Leader of Maine's Sustainability Solutions Initiative (SSI), I am writing to express my support for the project proposal, "Lidar for the Northeast." SSI, which is supported by a \$20 million, five year grant from NSF EPSCoR, seeks to enhance the science and management of landscape change in Maine, focusing particular attention on the effects of urbanization, forest management, and climate change. The proposed lidar project will be beneficial to SSI research projects by providing much-needed updated elevation data, as well as detailed land cover information. Thus, the improved data acquired as part of "Lidar for the Northeast" would be widely utilized by the 40+ research faculty, postdoctoral fellows, and numerous graduate students involved in SSI.

We expect that SSI's research projects will have a direct economic impact in Maine. Our research projects focus on landscape change and do so in a collaborative and interdisciplinary way. We work with a variety of stakeholders to develop research projects applicable to decisions our stakeholders make every day, and we do so using an interdisciplinary approach involving researchers from social, economic, and environmental fields.

For example, one of our current research teams includes an economist, a wildlife biologist, an environmental historian, a landscape change scientist, a plant scientist, and a geographer. This team is investigating the need for a more strategic and coordinated approach to land conservation – including the development of maps that identify state-wide high-value conservation lands. The proposed lidar data (and resulting land cover data) would greatly enhance the quality and utility of the maps in this project. The project's stakeholders include public agencies, non-profits, and private industry that want to use the project results to improve their land management and conservation decisions. In turn, SSI's results are expected to increase the ability of these stakeholder organizations to create or retain jobs related to land management in Maine.

Please don't hesitate to contact me if you have any questions about my strong support for this project.

Sincerely,

David D. Hart, Ph.D.
Research Leader, Sustainability Solutions Initiative
<http://www.umaine.edu/sustainabilitysolutions/index.htm>

College of Natural Sciences,
Forestry, and Agriculture
School of Forest Resources



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www.umaine.edu

November 10, 2009

USGS National Center
12201 Sunrise Valley Drive
Reston, VA 20192, USA

RE: Support of the proposal entitled "Lidar for the Northeast" submitted to the 2009 ARRA grant funding opportunity #10HQPA0014 through USGS

Dear Grants Review Committee:

As the Director of the School of Forest Resources (SFR) at the University of Maine, I am writing to express my support for the project proposal "Lidar for the Northeast." The proposed lidar project will be beneficial to SFR research projects, as it will provide much-needed updated elevation data, as well as detailed land cover including forest canopy height. These elements are important components of the forest research conducted at the SFR and would be widely used by faculty and graduate students.

The forest research conducted by the School of Forest Resources has a direct economic impact on the forest industry in Maine. The most effective forest modeling projects are those that use the latest information – which is rapidly becoming harder to acquire. The landscape modeling project at the SFR would find the products of this lidar proposal highly valuable in future research projects. Results from our many research projects are used by foresters and other land managers throughout the state, and affect many different decisions being made, such as business expansion, equipment purchase, and policy decisions.

I also am writing this letter as the Director of the Cooperative Forestry Research Unit (CFRU) at the University of Maine, a university/industry partnership devoted to pursuing research that is directly pertinent to forest landowners and managers. The CFRU is a research cooperative of 30 public and private forestland management organizations representing an ownership of over 8 million acres in Maine, 76,000 jobs, and an estimated \$10 billion impact to the state economy. Access to improved data through this lidar project would contribute greatly to our research projects and in turn can affect management decisions on much of Maine's forestlands.

Sincerely,

Robert G. Wagner, Director
Email: robert.wagner@maine.edu



MAINE'S LAND GRANT AND SEA GRANT UNIVERSITY
A Member of the University of Maine System



20 November 2009

US Geological Survey:

USM GIS is a consortium of dedicated faculty, staff, and administrators from across the colleges and departments of the university. We are dedicated to the education, use, and development of geospatial information and technologies in a number of subject areas. We provide academic, research, outreach, and service to the USM community, to our local communities, to the state of Maine, and beyond.

USM GIS wholeheartedly supports the proposal entitled "LiDAR for the Northeast," submitted to the 2009 ARRA grant funding opportunity #10HQPA0014 through USGS. We see the acquisition of these data over such a broad area and their dissemination as vital supplements and necessary enhancements to a variety of efforts here at USM. In the academic programs, the data provide a unique resource to instruct and educate students in remote sensing and GIS techniques useful to this current and future workforce. In research programs, the data provide an accurate source of elevation and feature structure essential to investigations into the impacts of climate change, including the effects of sea level change. These data would provide a boost to work we have begun through NASA grants to build science capacity and to investigate coastal wetland environments and the pressures and changes they are facing. In outreach and service programs, these data would fill current gaps to support funded monitoring programs and community planning. Indeed, the New England Environmental Finance Center could benefit immediately in their study of the costs of storms and rising seas on communities along the northeastern seaboard.

While these data will support a number of endeavors, their broad coverage and availability offer the opportunity for new discoveries, for fruitful collaborations, and for additional grant awards focused on addressing pressing issues.

Sincerely,

A handwritten signature in black ink, appearing to read "Vinton Valentine".

Vinton Valentine
Director of USM GIS



The State of New Hampshire
DEPARTMENT OF ENVIRONMENTAL SERVICES

Thomas S. Burack, Commissioner



November 23, 2009

Ms. Teresa Dean, National Map Program Officer
United States Geological Survey
12201 Sunrise Valley Drive, Mail Stop 511
Reston, VA 20192-0002

Dear Ms. Dean,

I am writing to express my strong support for the "LIDAR for the Northeast" proposal. This proposal represents an important data initiative that will further a number of State of New Hampshire priorities as well as important regional issues. Specifically, recent NH Legislative Commissions on flooding, sediment pollution to Great Bay, and stormwater have formally recognized airborne Light Detection and Ranging (LIDAR) as a critical data need. The Governor's Climate Change Task Force also identified LIDAR as a need for better adaptation policies.

In addition to these major policy initiatives, the NH Coastal Program within the Department of Environmental Services is involved in on the ground restoration in both upland and salt marsh areas. These efforts presently rely on mixed-resolution Digital Elevation Models (DEMs) that, at best, yield 2-foot contours. They will clearly benefit from improved topographic data – to assist in anticipating post-restoration conditions, to better understand potential impacts of sea level rise, and to support general project planning.

Further, the NH Geological Survey within the Department of Environmental Services relies on topographic data to support applied research related to land and water resources in the state. Several key programs are dependent upon high-resolution topographic data to accurately depict the natural and man-influenced landscape, with implications for public safety, geologic hazard identification, and water resource development.

Despite the dire state budget situation, two programs within the NHDES have pledged money for a total of \$20,000 to enlarge the project area to be funded by this proposal. I urge you to support this proposal, and believe that this investment will yield great returns in better land use planning and coastal resources decisions.

Sincerely,

Ted Diers, Manager
New Hampshire Coastal Program

DES Web site: www.des.nh.gov
50 International Drive, Suite 200, Portsmouth, New Hampshire 03801
Telephone: (603) 559-1500 • Fax: (603) 559-1510 • TDD Access: Relay NH 1-800-735-2964



**STATE OF NEW HAMPSHIRE
OFFICE OF ENERGY AND PLANNING
4 Chenell Drive
Concord, NH 03301-8501
Telephone: (603) 271-2155
Fax: (603) 271-2615**

MEMORANDUM

TO: United States Geological Survey

FROM: New Hampshire GIS Advisory Committee

DATE: November 18, 2009

SUBJECT: Support of the proposal titled "Lidar for the Northeast" submitted to the 2009 ARRA grant funding opportunity #10HQPA0014 through USGS

The New Hampshire GIS Advisory Committee expresses its strong support for the "Lidar for the Northeast" proposal. With a significant portion of New Hampshire's population located in the two counties that abut tidal waters, having accurate Lidar data is important to numerous segments of New Hampshire society that include public safety and emergency preparedness, coastal tourism, the boating and fishing industry, and responsible shoreline development. With continued climate change, it is crucial that planners and emergency service providers have the analytical resources that Lidar will provide to prepare for sea level rise and coastal and inland flooding.

High-quality topographic data, such as could be provided by Lidar, was identified as a priority data need in the 2007 GIS Strategic Plan for New Hampshire. Lidar data in the project area will provide the input for developing flood forecast models and for providing hydrologic models that will aid in guiding the state's future economic development along safe paths. In addition, the regional nature of this project, in an area of small states, is a strength. The project will allow for better cooperation and coordination of economic development and emergency preparedness around the shared resource, the Gulf of Maine.

The "Lidar for the Northeast" project is a crucial component in the nation's development of accurate topographic data, and we urge your selection of this project for funding.

Sincerely,

A handwritten signature in black ink, appearing to read "Kenneth R. Gallagher".

Kenneth R. Gallagher, Chair
NH GIS Advisory Committee



JOHN H. LYNCH
GOVERNOR

**STATE OF NEW HAMPSHIRE
OFFICE OF ENERGY AND PLANNING**

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www.nh.gov/ocp

November 10, 2009

Ms. Teresa Dean, National Map Program Officer
United States Geological Survey
12201 Sunrise Valley Drive, Mail Stop 511
Reston, VA 20192-0002

Dear Ms. Dean,

On behalf of the New Hampshire Office of Energy and Planning, I am writing in support of the "LiDAR for the Northeast" proposal submitted for funding through the National Map: Imagery and Elevation Maps Under ARRA (Program Announcement 10HQPA0014). While LiDAR data would enhance many of OEP's existing initiatives, it would significantly benefit our Geographic Information Systems (GIS) Program and the Floodplain Management Program.

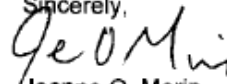
OEP's GIS Program works closely with the University of New Hampshire and numerous state agencies to coordinate the activities of New Hampshire's statewide GIS, known as GRANIT. This multi-agency coordination includes reviewing the broad array of application areas in which geospatial technologies are applied at the state and local levels, and planning for the acquisition and maintenance of data sets required to support those applications. As called for by the state's 2007 Strategic GIS Plan, the proposed project would significantly advance the development of a high priority data set – high-resolution elevation data for the state.

Further, OEP is the lead agency for the state's Floodplain Management Program, which is supported primarily by funds from FEMA's National Flood Insurance Program (NFIP). Local floodplain maps are the foundation of the NFIP and are used by many communities to make floodplain management and land use decisions. However, in New Hampshire, many of these floodplain maps are based on outdated and "coarse" topographic data models. More accurate floodplain maps will greatly enhance land use decisions by community officials as they will have better tools to inform their efforts to protect their communications and residents from future flood damage.

Finally, several new studies that were completed after the state's recent three major flood disasters (2005, 2006, 2007) have reported that LiDAR data are urgently needed to improve the accuracy of the state's mapped floodplain areas. In addition, acquisition of statewide LiDAR was a key recommendation put forth in the 2008 final report of the Comprehensive Flood Management Study Commission, authorized by House Bill 648 in the 2007 legislative session.

Thank you for the opportunity to comment on this important initiative.

Sincerely,


Joanne O. Morin
Director

JOM:c

TDD Access: Relay NH 1-800-735-2964



UNIVERSITY of NEW HAMPSHIRE

25 November, 2009

Dear Michael,

This letter is to express strong support for your proposal "Lidar for the Northeast". The elevation product that will result from this effort will be extremely valuable for both research and management purposes. I am a co-investigator at the Plum Island Long Term Ecological Research (LTER) in northeastern coastal MA, funded by the National Science Foundation (NSF). Our work in the watersheds focuses on the hydrological and biogeochemical responses to land use change and climate change. High resolution elevation data, currently unavailable, will help us better understand geomorphological changes associated with human activities, flooding patterns, and connections between stream channels and flood plains, which we hypothesize is an important control of biogeochemical fluxes in our low gradient watersheds. Understanding these characteristics is becoming more important should climate continue to change. As a result, we strongly support this proposal to develop improved elevation data sets. We expect to apply the resulting products towards various research questions, which would employ both technicians and students at the University of New Hampshire, and possibly at other collaborating institutions as well.

Should the project be funded, we would like to "buy-up" to the higher resolution product that is available, though not targeted for most of the proposed study area. The NSF has provided supplemental funds to our LTER site for LIDAR (up to 38k), which we would contribute to the proposed project in order to get the higher resolution product for the roughly 500km² area that encompasses the Plum Island watersheds. We require the higher resolution product to support some of our research questions.

Sincerely,

Wilfred Wollheim

Research Assistant Professor
Co-Director Water Systems Analysis Group
Complex Systems Research Center
University of New Hampshire
Durham NH 03824
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Complex Systems Research Center
Institute for the Study of Earth, Oceans, and Space
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DEVAL L. PATRICK, GOVERNOR
TIMOTHY P. MURRAY, LT. GOVERNOR
JEFFREY B. MULLAN, SECRETARY & CEO
LUISA PAIEWONSKY, ADMINISTRATOR



November 20, 2009

Mr. James Mauck
Orthoimagery and Elevation Theme Coordinator
U.S. Geological Survey
12201 Sunrise Valley Drive
Reston, VA 20192

Dear Mr. Mauck:

With reference to USGS award opportunity 10HQPA0014, the Highway Division of the Massachusetts Department of Transportation fully supports the grant proposal by New England states to the U.S. Geological Survey for a project which will include detailed elevation mapping in the coastal counties of Massachusetts. It's clear that climate change is already leading to more frequent extreme rainfall events, to sea level rise, and to more intense coastal storms. As highlighted in the National Research Council's Transportation Research Board study, "Potential Impacts of Climate Change on U.S. Transportation," we need LiDAR data to characterize the vulnerability of infrastructure and to plan for mitigation of the impacts of these more severe weather events and changing weather patterns.

Specifically, we need to revisit estimates of flood risk for the 1000 miles of Massachusetts roadways as well as the tunnels, bridges, storm water controls, airports and subways currently identified as being in the floodplain and/or in need of redesign to improve stormwater controls. We also need to establish new design standards for transportation infrastructure that reflect changes in stormwater flows. **We cannot accomplish these tasks without more detailed elevation data.** These data will also have great value for transportation planners at the preliminary design stages for new interchanges, road widening and other major projects.

As a measure of the Highway Division's support for this project, we can provide assistance with quality assurance of the data. This assistance would consist of deploying surveyors from our Survey Section to acquire surveyed coordinate values for locations identified by the USGS in the project area. In a similar effort, we provided coordinate values for approximately 95 locations in support of USGS orthoimagery projects in 2008 and 2009. These projects were conducted in collaboration with MassGIS and, for 2009, with funding provided by the Department of Transportation.

I strongly support this proposal as it will provide us with key information that we currently lack. Thank you.

Sincerely,

/S

Luisa Paiewonsky
Administrator

Massachusetts Department of Transportation, Highway Division • www.mass.gov/massdot
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THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENERGY AND ENVIRONMENTAL AFFAIRS
OFFICE OF COASTAL ZONE MANAGEMENT
251 Causeway Street, Suite 800, Boston, MA 02114-2136
(617) 626-1200 FAX: (617) 626-1240

November 19, 2009

Jim Mauck
Orthoimagery and Elevation Theme Coordinator
U.S. Geological Survey
12201 Sunrise Valley Drive
Reston, VA 20192

Dear Mr. Mauck:

I am writing on behalf of the Massachusetts Office of Coastal Zone Management (CZM) in strong support of the proposal submitted in partnership of six Northeast states, including Massachusetts, which is seeking American Recovery and Reinvestment Act funds for high-resolution elevation data in coastal counties and communities in the Commonwealth under the U.S. Geological Survey (USGS) award opportunity #10HQPA0014.

Throughout the Nation, our coastal resources play a significant role in supporting viable local, regional, and state economies; preserving our natural resources and quality of life; providing recreational opportunities for all incomes; and in protecting our commerce, homes, and personal safety. The coastal zone will also feel the brunt of global climate change. In Massachusetts more than 37 percent of the gross state product is driven by coastal and ocean economic sectors. Through the combined effects of climate change—accelerated sea level rise, more frequent and intense storms, and shifts in precipitation and temperatures—these areas will see increased flooding and shoreline erosion, changes in sediment transport, saltwater intrusion into groundwater aquifers and coastal rivers, increased harmful algal blooms, the loss of coastal wetland and coral reef habitats, and changes in population dynamics among marine and coastal species.

The coastal watersheds to be covered in this proposal proposed for priority coverage is home to more than 5 million people (or 77 percent of the state population), and includes the major ports of Boston, New Bedford, Gloucester, Fall River and Salem as well as the urban centers of Worcester, Lawrence, and Lowell. The area represents the majority of the state's economic activity, and includes critical transportation infrastructure and important development, redevelopment, and regional initiatives (like the South Coast Rail and Boston Metro Futures plan). In the coastal Massachusetts, there are vast areas of low-lying flood-prone areas (e.g., Wareham, Revere, and Hull) and areas of very high erosion (e.g., Scituate, Newburyport, and Nantucket). The Cape Cod, Plymouth Carver, and Nantucket Island aquifers represent critical sole-source drinking waters supplies in the state.

Managers, officials, and decision-makers are starting to plan for and implement effective measures to ensure coastal community resiliency, but in order to do this, they need the proper tools. A recent report—*Coastal Sensitivity to Sea Level Rise*—from the US Climate Change Science Program Synthesis and Assessment called explicitly for better information on elevations in coastal areas. For all of the issue areas listed above (and more), high-resolution topographic and bathymetric elevation

DEVAL L. PATRICK GOVERNOR TIMOTHY P. MURRAY LIEUTENANT GOVERNOR IAN A. BOWLES SECRETARY DEERIN BABB-BROTT DIRECTOR
www.mass.gov/czm

data serve as a requisite foundation for characterizing the threat and risk and for developing solutions. This baseline information can be coupled with region-specific tide data, sea level rise projections, hydrologic models, and other key parameters to identify the areas, facilities, and resources most vulnerable to climate change impacts. Applications that this critical elevation data will directly support in Massachusetts include:

- Localized Sea Level Rise Scenarios – High-resolution coastal topographic and bathymetric elevation data can be coupled with region-specific tide data, sea level rise projections, and other key input parameters to develop basic inundation models for the assessment of lands and resources most vulnerable to accelerated sea level rise.
- Storm Surge Models – Existing models that estimate wind conditions and storm surge heights resulting from predicted storm events can be refined to incorporate the unique configurations of local embayments or coastline morphologies, water depths, and infrastructure such as bridges and roads to develop more accurate storm surge predictions and serve as effective planning tools for decisions being made today about redevelopment and the siting of new development and public infrastructure.
- Critical Facilities/Infrastructure Assessment – When combined with mapping already underway through Hazard Mitigation or other programs, elevation data will support detailed planning for inundation scenarios derived from the kinds of modeling described above for key facilities such as wastewater treatment plants, electrical generation and transmission facilities, public safety and other government facilities, key institutional and business sites and other locations where the state and the private sector should focus remediation efforts.
- Impacts on Habitats and Ecosystem Services – The integrity of many habitats and the services they provide depend on their physical settings. With more accurate elevation information, scientists and managers can assess potential changes to drivers like hydroperiod, erosion and deposition cycles, sediment/organic material transport, and micro-climate regimes. We cannot accurately predict the fate of breeding habitat for endangered species in response to accelerated sea level rise, for example, without a better understanding of elevation in relation to tidal inundation and erosion/accretion rates.
- Ground Water and Salt Water Intrusion – Climate change will have significant effects on local hydrologic cycles through altered precipitation, surface runoff, evapo-transpiration, and soil moisture patterns. These changes will lead to altered groundwater recharge in watershed areas, which will change the groundwater flow to coastal regions and thus the rate of saltwater intrusion in coastal aquifers. This is a critical issue for many Massachusetts communities, especially those whose drinking water supplies are sole-source aquifers. Topographic elevation is needed as a baseline to assess risk to local or regional hydrological processes and coastal water resources.
- Public Safety and Floodplain Mapping – High resolution, accurate elevation data are key to the development of floodplain mapping and the support of real-time flood response capabilities. Elevation information at sufficient resolution will directly support FEMA-approved methods for generating hydrological and hydraulic engineering models of flooding and would support the identification of areas at risk, and planning for protecting property and emergency response and assistance.

One of the key considerations in the USGS American Recovery and Reinvestment Act strategy is the ability to support and connect to USGS and other science focuses. To this end, the

following is a short list of existing and planning-stage USGS science projects that would make immediate use of Massachusetts LIDAR elevation data to meet or enhance science objectives:

- High-resolution geologic mapping offshore of Massachusetts;
- National assessment of coastal change hazards, including: historic shoreline changes from LIDAR, extreme storm hazards, near-real time predictions of storm impacts, and sea-level rise hazards;
- Integrating geologic, hydrologic, and biologic assessments of sea-level rise vulnerability into a decision-support framework; and
- Sea-level rise vulnerability of: existing and planned coastal infrastructure, endangered species habitat, and coastal aquifers of southeastern Massachusetts.

The Commonwealth has a very strong track record on planning and implementing cooperative projects with USGS. CZM and USGS's Woods Hole Science Center initiated the Seafloor Mapping Cooperative in 2003 to comprehensively map the bathymetry and surficial geology of the seafloor in Massachusetts waters. The program is a success story in partnerships, funded by a combination of state, federal, and private sector contributions, while effectively leveraging expertise and technology within state and federal agencies.

In closing, we urge USGS to give top consideration to the Northeast proposal including coastal watersheds in Massachusetts for priority acquisition of high-resolution LIDAR elevation data.

Sincerely,



Deerin Babb-Brott
Director



Deval L. Patrick
Governor

Timothy P. Murray
Lieutenant Governor

Kevin M. Burke
Secretary

**THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF PUBLIC SAFETY AND SECURITY**

MASSACHUSETTS EMERGENCY MANAGEMENT AGENCY

400 Worcester Road Framingham, MA 01702-5399

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Don R. Boyce
Director

November 23, 2009

Jim Mauck
Orthoimagery and Elevation Theme Coordinator
U.S. Geological Survey
12201 Sunrise Valley Drive
Reston, VA 20192

Dear Mr. Mauck:

In reference to USGS award opportunity 10HQPAA0014, the Massachusetts Emergency Management Agency fully supports the grant proposal by New England states to the U.S. Geological Survey for a project which will include detailed elevation mapping in the coastal counties of Massachusetts

Climate change is already leading to a greater frequency of intense rainfall events, to sea level rise, and to more intense coastal storms. Characterizing the vulnerability of infrastructure and other cultural and natural resources as well as planning for and mitigating the impacts of more severe weather requires more detailed elevation mapping.

In emergency response, detailed elevation models are used during storm events to show areas likely to be inundated. Used with real-time predictions of river levels, such mapping allows emergency managers to prioritize neighborhood evacuations and other response efforts. Similarly, pre-disaster planning measures (e.g. relocation of hazardous materials and flood-proofing of structures) can only be correctly implemented if we have suitable elevation data as the base for engineering studies. A detailed understanding of the operational impacts of river flooding and potential coastal inundation on power generation, water and wastewater treatment, communications, solid waste and other public and private facilities cannot be developed without detailed elevation data. Most importantly, elevation data funded through this grant will directly support FEMA-approved methods for revised floodplain mapping. The data currently available proves inadequate, without this added benefit, for the aforementioned tasks.

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P.O. Box 116
365 East Street
Tewksbury, MA 01876
Tel: 978-328-1500 Fax: 978-851-8218

Region II
P.O. Box 54
12-I Rear Administration Road
Bridgewater, MA 02324-0054
Tel: 508-697-3600 Fax: 508-697-8869

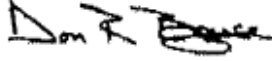
Region III / IV
1002 Suffield Street
Agawam, MA 01001
Tel: 413-821-1500 Fax: 413-821-1599

Commonwealth of Massachusetts

Emergency Management Agency

I strongly support this proposal and urge reviewers to give it their full consideration. I look forward to a positive review and a successful outcome for the Commonwealth.

Sincerely,

A handwritten signature in black ink, appearing to read "Don R. Boyce".

Don Boyce
Director

Cc: Kurt Schwartz, Undersecretary, Executive Office of Public Safety and Security
Paul Ford, Acting Regional Administrator DHS/FEMA Region I



Office of the State Geologist
Department of Geosciences
University of Massachusetts
611 North Pleasant Street
Amherst, MA 01003

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November 14, 2009

Jim Mauck
Orthoimagery and Elevation Theme Coordinator
U.S. Geological Survey
12201 Sunrise Valley Drive
Reston, VA 20192

Re: USGS Award Opportunity Number 10HQPA0014 - National Geospatial Program: Building The National Map

Dear Mr. Mauck:

This letter is provided in support of MassGIS' and its state partners' proposal to seek American Recovery and Reinvestment Act funds to collect and process high-resolution elevation data (LIDAR) in coastal counties and communities in Massachusetts under USGS award opportunity number 10HQPA0014. The Office of the Massachusetts State Geologist (OMSG) endorses this effort and pledges its full support to this proposal.

While it is recognized that the acquisition of LIDAR data is focused on areas most susceptible to storm and hurricane flooding, earthquake damage and coastal erosion, there are other very tangible benefits to the public that add considerable value to the work you propose. For example, over the last seven years the OMSG has been embarking on a bedrock mapping and fracture characterization program along the I-495 corridor, a circumferential highway that lies just west of Boston. Considerable development has occurred along this corridor over the last 30 years, which has stressed natural resources, particularly water resources. Many communities are turning to bedrock aquifers to meet their potable demands. However, these communities need help in identifying potential sources of water. LIDAR data is superior for locating transmissive fracture zones and/or faults in the bedrock, even under a cover of overburden, which may be critical for identifying potential sources of groundwater in the bedrock and in interpreting the geology. In addition, LIDAR is valuable for corroborating fracture data collected in the field and lineament analyses, a technique commonly used by consultants in water resource investigations.

Over the next 10 years, the OMSG plans on continuing its mapping efforts along the I-495 corridor. The quadrangles that we will be mapping in order of priority are: Holliston, Franklin, Medfield, Wrentham, Norton, Brockton, Taunton, Georgetown, Salem Depot, Haverhill, Newburyport East and Newburyport West. All of these quadrangles are situated in coastal counties and all will be facing water supply issues that can be aided considerably by the availability of LIDAR data.

Second, the OMSG just began a carbon sequestration feasibility project for the Commonwealth in the Narragansett Basin in southeastern Massachusetts. The basin resides mostly in Bristol and

Plymouth counties, which are coastal counties and among the fastest growing areas in Massachusetts. Sequestration of carbon depends in part on having structural traps bounded by faults that will retain the carbon in the sedimentary reservoir. Knowing where the faults are is critically important and helps us plan better any geophysical studies that are needed and helps us focus our investigations in a cost effective manner. LIDAR data would certainly be a big help in interpreting the faults and geology.

Finally, the OMSG will be commencing a bedrock mapping project of the Boston Harbor Islands National Recreation Area with the National Park Service. Because we will be mapping at 6000 to 12000 scale, high resolution elevation data will be very helpful in this mapping effort.

Without question, there is value added in acquiring LIDAR data that serves the public far beyond addressing coastal erosion and flooding hazards. Acquisition of LIDAR data will also have a direct impact on water resource development in bedrock aquifers, investigation of contamination transport in fractured rock and evaluation and planning of subsurface investigations for large engineering and public works projects.

I strongly endorse this proposal and urge the reviewers to give it their full consideration. If there is anything else you need or if you have any questions, please do not hesitate to contact me.

Sincerely,



Stephen B. Mabee, Ph.D., PG
State Geologist



CITY OF BOSTON THE ENVIRONMENT DEPARTMENT

Boston City Hall, Room 805 • Boston, MA 02201 • 617/635-3850 • FAX: 617/635-3435

November 23, 2009

Mr. Jim Mauck
Orthoimagery and Elevation Theme Coordinator
U.S. Geological Survey
12201 Sunrise Valley Drive
Reston, VA 20192

RE: USGS Award Opportunity Number 10HQPA0014, Northeast Regional Proposal

Dear Mr. Mauck:

On behalf of the City of Boston Conservation Commission I write to support the Northeast Regional Proposal, including the Commonwealth of Massachusetts through its Office of Geographic and Environmental Information (MassGIS), to procure American Recovery and Reinvestment Act funds for the collection and processing of high resolution elevation data of Massachusetts coastal areas, under United States Geological Survey award opportunity number 10HQPA0014.

The Conservation Commission's primary duty is the administration of the Massachusetts Wetlands Protection Act within the City of Boston. Accordingly, the Commission is responsible for the review and permitting of projects in coastal flood hazard zones and coastal wetland resource areas. The Commission evaluates projects in these areas to ensure proposals will not contribute to damage caused by coastal flooding, or degrade the capacity of coastal resource areas to mitigate storm damage impacts. High resolution elevation data will assist the commission in delineating coastal wetland resources and identifying areas vulnerable to coastal hazards that may need to be afforded additional protection and mitigation measures.

The City of Boston has also been working to address climate change issues, including the anticipated effects of sea level rise. The City's density of resources and infrastructure in close proximity to the harbor make it highly vulnerable to tidal inundation and coastal storms which are expected to become more frequent and damaging. The July 2007 report, *Confronting Climate Change in the U.S. Northeast*, references Boston as a one of the more exposed and susceptible cities along the east coast.

To address the threats posed by sea level rise, and more intense coastal storm events, the City has been working closely with the state Office of Coastal Zone Management's Stormsmart Coasts program to develop management strategies to minimize and mitigate impacts upon urban infrastructure and coastal resource areas. High resolution elevation data will augment this effort as it will assist in identifying vulnerable coastal areas and the types of mitigation

D. Bryan Glascock, Director

PRINTED ON RECYCLED PAPER

Thomas M. Menino, Mayor

10-100000-0001

USGS Award Opportunity Number 10HQPA0014, Northeast Regional Proposal, Nov. 23, 2009

2 of 2

measures most appropriate for those locations. The elevation data will also support waterfront planning efforts and the development of local emergency management and preparedness plans.

The Conservation Commission again expresses its strong support for this proposal. The information provided through high resolution elevation data will enhance the commission's capacity to evaluate coastal projects, and assist Boston and other coastal communities in addressing coastal hazards and prepare for the future challenges posed by climate change.

Sincerely,

A handwritten signature in black ink, appearing to read "Chris H. Busch", with a stylized flourish at the end.

Chris H. Busch, Executive Secretary
Boston Conservation Commission

cc: James W. Hunt, Chief, Energy and Environmental Services
Richard McGuinness, Deputy Director for Waterfront Planning, BRA

Old Colony Planning Council

Jeanmarie Kent Joyce
President

70 School Street
Brockton, MA 02301-4097



Pasquale Ciaramella
Executive Director

Telephone: (508) 583-1833
Fax: (508) 559-8768
EMAIL: info@ocpcrpa.org

November 20, 2009

Mr. James Mauck
Orthoimagery and Elevation Theme Coordinator
U.S. Geological Survey
12201 Sunrise Valley Drive
Reston, VA 20192

Dear Mr. Mauck:

The Old Colony Planning Council fully supports the grant proposal by MassGIS and its partner states to the U.S. Geological Survey for funding to acquire detailed elevation mapping in the coastal counties of Massachusetts through USGS award opportunity 10HQPA0014.

Our region includes the City of Brockton and fourteen communities in Southeastern Massachusetts, and much of the land in this region is subject to both riverine and coastal flooding and erosion.

We believe that elevation data is needed to develop adaptation strategies in response to more intense rainfall events, sea level rise and more frequent and intense coastal storms.

Typical needs include:

Transportation – estimate impacts of flooding on the miles of regional roadways and the tunnels, bridges, storm water controls, airports and subways currently identified as being at risk and/or in need of redesign; use in new design standards

Coastal – characterize impacts on marsh habitat vulnerable to sea level rise and evaluate potential for plant communities to migrate upland or otherwise adapt.

Local Economy – inform planning for decisions on whether to abandon or defend the property at risk from increased coastal and riverine flooding; enable better floodplain mapping to guide local land-use controls/zoning that prohibits new development in areas at risk

Human Health and Welfare – enable pre-disaster planning and real time response to flood events e.g. relocation of hazardous materials and evacuation of neighborhoods

Key Infrastructure –develop a detailed understanding of the operational impacts of both sea level rise and inundation on power generation, water and wastewater treatment, communications, solid waste and other facilities

The Council is very impressed with the proposal and the project fits the purposes of this program therefore we strongly urge its approval.

Sincerely,

Pasquale Ciaramella
Executive Director



Southeastern Regional Planning & Economic Development District

◀ 88 Broadway ▼ Phone (508)824-1367 ▼ FAX (508)823-1803 ▼ ssmith@srpedd.org ▼ Taunton, MA 02780 ▶

November 19, 2009

Jim Mauck
Orthoimagery and Elevation Theme Coordinator
U.S. Geological Survey
12201 Sunrise Valley Drive
Reston, VA 20192

Dear Mr. Mauck:

The Southeastern Regional Planning and Economic Development District fully supports the grant proposal by MassGIS and its partner states to the U.S. Geological Survey for funding to acquire detailed elevation mapping in the coastal counties of Massachusetts through USGS award opportunity 10HQPAA0014."

There is pretty broad agreement that improved elevation data is needed to develop adaptation strategies in response to more intense rainfall events, sea level rise and more frequent and intense coastal storms. For Lidar, this is the "killer app." Typical needs include:

Transportation – estimate impacts of flooding on the 1000 miles of Massachusetts roadways and the tunnels, bridges, stormwater controls, airports and subways currently identified as being at risk and/or in need of redesign; use in new design standards.

Coastal –characterize impacts on marsh habitat vulnerable to sea level rise and evaluate potential to for plant communities to migrate upland or otherwise adapt.

Local Economy –inform planning for decisions on whether to abandon or defend the estimated \$20 billion of property at risk from increased coastal and riverine flooding; enable better floodplain mapping to guide local land-use controls/zoning that prohibits new development in areas at risk.

Human Health and Welfare – enable pre-disaster planning and real time response to flood events e.g. relocation of hazardous materials and evacuation of neighborhoods.

Key Infrastructure –develop a detailed understanding of the operational impacts of both sea level rise and inundation on power generation, water and wastewater treatment, communications, solid waste and other facilities.

If you have any questions, please do not hesitate to contact me.

Sincerely,

Stephen C. Smith Executive Director



Metropolitan Area Planning Council

60 Temple Place, Boston, Massachusetts 02111 617/451-2770 Fax 617/482-7185

Serving 101 cities and towns in metropolitan Boston

November 20, 2009

Jim Mauk
Orthoimagery and Elevation Theme Coordinator
U.S. Geological Survey
12201 Sunrise Valley Drive
Reston, VA 20192

Re: MassGIS proposal for ARRA funds for LIDAR data: USGS award opportunity 10HQPAA0014

Dear Mr. Mauck:

We are pleased to support MassGIS and its state partners in seeking funding for LIDAR data in coastal counties and communities in Massachusetts. The Metropolitan Area Planning Council (MAPC) has over 45 years of experience in providing data and maps to inform planning decisions for 101 cities and towns in the Greater Boston region. We have a strong working relationship with MassGIS and rely on the data infrastructure it provides to make robust plans guiding the growth and wellbeing of the Greater Boston metropolitan region.

MAPC contains many coastal municipalities, making it particularly vulnerable to climate change impacts. LIDAR will improve our capacity to support municipalities and the region in considering climate change impacts, particularly as they relate to coastal flooding and fresh water salinization from sea level rise. If available, we would put LIDAR-derived high resolution elevation data directly to use, informing plans at local and regional levels.

In January 2010, we will begin to update hazard mitigation plans for several of our coastal communities funded through FEMA's Pre-Disaster Mitigation Program. If LIDAR data were available, we would certainly incorporate it to provide a more robust analysis of flood hazard conditions in the present and the future. An understanding of likely future flood conditions is very important for communities siting development and expensive and long-lasting infrastructure in the coastal zone.

Using better elevation data for both development planning and hazard mitigation planning will help us to decrease the negative impact of flooding on life, property, and the environment. For these reasons, we strongly support the aforementioned proposal.

Sincerely,

A handwritten signature in cursive script that reads 'Holly St. Clair'.

Holly St. Clair
Director of Data Services

Jay Ash, *President*
Secretary

Michelle Ciccolo, *Vice President*

Grace S. Shepard, *Treasurer*

Marilyn Contreas,

Marc D. Draisen, *Executive Director*



November 20, 2009

Jim Mauck
Orthoimagery and Elevation Theme Coordinator
U.S. Geological Survey
12201 Sunrise Valley Drive
Reston, VA 20192

Re: Northeast Proposal for ARRA-Funded High-Resolution Elevation Data

Dear Mr. Mauck,

On behalf of Mass Audubon, I am writing in support of USGS award opportunity number 10HQPA0014, the Northeast regional grant proposal seeking American Recovery and Reinvestment Act (ARRA) funds for high-resolution elevation data in coastal counties and communities. This regional proposal represents a 6-state partnership of Massachusetts, Maine, New Hampshire, Rhode Island, Connecticut and New York.

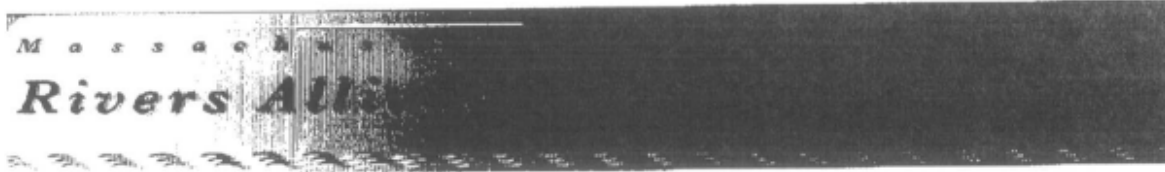
As a conservation organization, Mass Audubon is concerned about the impending impacts of climate change on the nature of Massachusetts. Led by MassGIS, Massachusetts' participation in this Northeast partnership would provide important elevation data on coastal watersheds statewide, giving us a better sense of future flood vulnerabilities connected to sea level rise and more frequent extreme precipitation events. The use of Light Detection and Ranging (LiDaR) sensors will help us better prepare for and, where possible, protect against loss of coastal habitat and wildlife populations. These losses would not only be environmental but economic, as much of Massachusetts' tourism industry is based on its natural coastal landscapes and beaches. The Massachusetts coastline has been identified as an ARRA "Project Area of Interest," further demonstrating the importance of this potential elevation data.

I urge you to approve the Northeast regional grant proposal for funding; it will truly benefit many of Massachusetts' most important and complex natural systems and allow us to start adapting to climate change while we still can. Thank you for your consideration.

Sincerely,



John J. Clarke
Director of Public Policy and Government Relations



Massachusetts Rivers Alliance
62 Summer Street
Boston, MA 02110
www.massriversalliance.org

Nov. 20, 2009

Jim Mauck, Orthoimagery and Elevation Theme Coordinator
U.S. Geological Survey
12201 Sunrise Valley Drive
Reston, VA 20192

Re: LiDaR for the Northeast, the Northeast Regional Proposal, including Massachusetts through MassGIS, for high-resolution elevation data in coastal counties and communities in Massachusetts under USGS award opportunity number 10HQA0014.

Dear Mr. Mauck,

I am writing on behalf of the Massachusetts Rivers Alliance to support funding of the North East Regional Proposal for high-resolution elevation data in coastal counties and communities in Massachusetts under USGS award opportunity number 10HQA0014. The Massachusetts Rivers Alliance is a private non-profit organization whose mission is to restore and protect the rivers and streams in Massachusetts and the ecosystems they support. Our 24 organizational members include organizations across the state whose missions include river conservation.

Our member organizations are very concerned about the impact of climate change on their rivers, streams, waters supplies and coastal resources, but water resource management agencies in Massachusetts, including USGS, lack the critical elevation data needed to plan for the future. Flooding and salt water intrusion of coastal aquifers are problems of particular interest. If this project is funded, the Federal Emergency Management Agency (FEMA) will be able to use the high-resolution elevation data to update of their Flood Insurance Rate Maps (FIRMs). In addition, water resource agencies like the US Geological Service, the Massachusetts Department of Environmental Protection and the Massachusetts Department of Conservation and Recreation will be able to more accurately map river floodplains and start to model scenarios with changing precipitation patterns. The data will also be available to the public, served by MassGIS, which will allow watershed groups and others to use the data for water resource modeling projects.

Again, we support this proposal and hope that you will fund it.

Sincerely,

A handwritten signature in black ink, appearing to be "Julia Bratt". The signature is written over the printed name and title.

Julia Bratt
Executive Director

United States Department of Agriculture



Natural Resources Conservation Service
60 Quaker Lane, Suite 46
Warwick, RI 02886
Phone 401.828.1300, fax 401.828.0433



Helping People Help the Land...

Date: November 19, 2009

RE: Support for the proposal titled "Lidar for the Northeast" submitted to the 2009 American Recovery and Reimbursement Act (ARRA) grant funding opportunity #10HQPA0014 through United States Geological Survey (USGS).

To: U.S. Geological Survey

RE: Support for the proposal titled "Lidar for the Northeast" submitted to the 2009 ARRA grant funding opportunity #10HQPA0014 through USGS.

The Rhode Island USDA-Natural Resources Conservation Service is in full support of the New England Lidar proposal. Elevation data and the products derived from the data will benefit our agencies mission and assist with our conservation planning and soil survey program. Detailed elevation has been listed as one of our top priority needs for the state.

The RI NRCS has adopted a "Working Waters" element into our strategic plan and are focusing our conservation programs to restoring and protecting our coastal and shallow water resources. In addition, we have formed a partnership called "The Mapping Partnership for Coastal Soils and Sediments" (MapCoast) which is working to collect data and map the coastal zone and shallow water resources. During our user conferences for MapCoast the number 1 data request was detailed elevation and bathymetry data.

Aside from the traditional uses of this data along the coastal zone the data will also benefit our watershed planning activities, emergency watershed planning, dam safety, forestry applications, and engineering projects.

The RI NRCS has \$3,000 in funding that is available for this proposal via the interagency agreement between the NRCS and USGS. We are also working with our state partners (RIGIS) to provide support for this project.

Sincerely,

A handwritten signature in black ink, appearing to read "Phoukham Vongkhamdy", is written over a large, stylized, looping flourish that extends from the signature down towards the typed name.

PHOUKHAM VONGKHAMDY
State Conservationist

cc: Shane White, RIGIS Coordinator
Charles Labash, Director URI EDC.

The Natural Resources Conservation Service provides leadership in a partnership effort to help people conserve, maintain, and improve our natural resources and environment.

An Equal Opportunity Provider and Employer



STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

Department of Administration
STATEWIDE PLANNING PROGRAM
One Capitol Hill
Providence, RI 02908 - 5872

To: United States Geological Survey

From: Jared Rhodes, Chief

Subject: Support of the proposal titled "LiDAR for the Northeast" submitted to the 2009 ARRA grant funding opportunity #10HQPA0014 through USGS

Date: 11/24/2009

The State of Rhode Island, Department of Administration, Division of Planning, Statewide Planning Program supports a consortium of Northeast States effort to obtain \$1.5 million to acquire LiDAR elevation data along the coast according to the **Draft USGS Base LiDAR Specification** (version 12) which includes 2-meter horizontal point sampling, 15-centimeter vertical RMSE, and standard products. Rhode Island in particular will be covered in its entirety with USGS award funds combined with \$75,875 of matching funds from The United States Federal Highway Administration (FHWA).

Through a separate Joint Funding Agreement (JFA) between the USGS and the State of Rhode Island, the resolution of the collection will be increased to 1-meter horizontal point sampling and 9.25-centimeter vertical RMSE, plus enhanced products. The Rhode Island State Planning Council, commit to contributing \$124,125 for buy-up to the higher LiDAR specifications and enhanced products for Rhode Island.

This brings the total FHWA funding to \$200,000. To document this supported funding, attached is a proposed (6/11/09) **2010 FHWA Unified Planning Work Program** (UPWP) budget showing \$300,000 for GIS data development under the **Contractual and Pass Thru Grants** section. This proposed 2010 UPWP was approved (6/30/09) by the FHWA and FTA; attached is the approval letter.

cc: Shane White, RIGIS Coordinator
Charles LaBash, URI-EDC Director

a: 2010 FHWA UPWP; Section 6; Part 4
FY10 UPWP Approval Letter

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

Michael P. Lewis
Director



Department of Transportation
OFFICE OF THE DIRECTOR
Two Capitol Hill
Providence, R.I. 02903-1124

OFFICE (401) 222-2481
FAX (401) 222-2086
TDD (401) 222-4971

To: United States Geological Survey

From: Michael P. Lewis, Director

Date: November 20, 2009

RE: Support of the proposal titled "LiDAR for the Northeast" submitted to the 2009 ARRA grant funding opportunity #10HQPA0014 through USGS

On behalf of the Rhode Island Department of Transportation, I want to express our support for the Northeast Regional LiDAR proposal. Like much of the Nation's transportation infrastructure, Rhode Island's roads and bridges are deteriorating. In fact, the majority of our most heavily traveled roads and bridges were built between the 1950s and the 1970s are reaching the end of their designed service life. As a result we are entering a period when an unprecedented level of highway and bridge reconstruction will be required. Seamless statewide elevation data will provide our engineers, surveyors and planners with a geospatial database that will enable them to efficiently develop plans to improve our aging roads, highways, and bridges in the State.

Rhode Island's economy is closely dependent upon the health of its transportation infrastructure. The proposed LiDAR project will be an important tool in Rhode Island's efforts to efficiently prioritize, plan and design the projects needed to revitalize our aging infrastructure.



STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

COASTAL RESOURCES MANAGEMENT COUNCIL

Oliver H. Stedman Government Center
4808 Tower Hill Road, Suite 3
Wakefield, R.I. 02879-1900

(401) 783-3370
FAX: (401) 783-3767

November 17, 2009

To: United States Geological Survey

RE: RICRMC support of the proposal titled "Lidar for the Northeast" submitted to the ARRA grant funding opportunity #10HQPAA0014 through USGS

The Rhode Island Coastal Resources Management Council (RICRMC), as the coastal zone management agency for the State of Rhode Island, is charged to preserve, protect, develop, and where possible, restore the coastal resources of the State of Rhode Island for this and succeeding generations through comprehensive and coordinated long range planning and management. The agency is currently in the process of developing regulations for climate change adaptation and mitigation. Present adaptation efforts include collaboration with the RI State Building Commission, the RI Emergency Management Agency and RI Sea Grant to strengthen building code requirements in areas prone to flooding. In addition, we are working with several NGOs, including The Nature Conservancy and Save the Bay, to develop policies and regulations to protect coastal resources in light of climate change.

These planning efforts absolutely require high resolution, accurate topographic data and Lidar is by far the most accurate and feasible way to obtain needed elevation data. Accurate elevation data in coastal areas are vital for further understanding critical environmental issues that the State of Rhode Island will face over the short term and long term, such as the susceptibility to coastal flooding and coastal habitat degradation.

Currently the New England region lacks good, consistent topographic data of large expanses of coastal areas. These data are essential to understand coastal geomorphology, to model flood inundation zones, and to analyze the impacts of floodplain development on a regional level rather than on a project by project basis. High resolution digital elevation models are important tools to provide the safest pre-disaster mitigation strategies and the best evacuation plans for the citizens of Rhode Island in the event of a disaster. In addition, these data can be used for planning purposes in CRMC Special Area Management Areas, for delineating watersheds, examining stormwater discharges to improve water quality, and for analysis of groundcover, vegetation and impervious surface.

The RI Coastal Resources Management Council strongly supports the regional scope of the "Lidar for the Northeast" proposal. Coastal resources extend beyond state boundaries. Protection of these valuable resources will benefit the thousands of people who rely on these resources for their livelihood. The proposed Lidar data set is exactly the type planning tool needed for the protection of these coastal resources and ensuring the economic viability of the coastal region. This project is a wise investment of ARRA funds and has the wholehearted support of the RI Coastal Resources Management Council.

Sincerely,

Grover Fugate, Executive Director



November 16, 2009

Charles LaBash, GISP, Director
Environmental Data Center
Department of Natural Resources Science
University of Rhode Island, 105 Coastal Institute
1 Greenhouse Rd
Kingston, RI 02881

David R. Gifford, MD, MPH
Director of Health

Three Capitol Hill
Providence, RI 02908-5097

401.222.2231

401.222.6548 Fax

TTY: 711

www.health.ri.gov

Subject: Agency support for a Northeast Regional elevation dataset

Dear Mr. LaBash:

This is in support of the Northeast Regional elevation dataset. It is clear that Light Detection and Ranging (LiDAR), a remote sensing system used to collect topographic data, is a key information resource to: ensure public safety of the citizens of Rhode Island, especially those living in flood-prone areas; improve the state's economy; and manage our valuable natural resources.

The USGS ARRA funding opportunity will provide a base level of LiDAR data that, coupled with leveraged funding from FHWA, NGOs, and other sources in our state, will allow us to buy-up and produce enhanced topographic data products that will serve the many planning and public safety needs we have in Rhode Island. Accurate elevation data are required by cities and towns for their economic and environmental planning. Other areas where enhanced LiDAR data will provide economic support and promote the development of new jobs in our State include:

- Transportation infrastructure – providing engineers, surveyors, planners with a geospatial database that will enable them to develop plans and models for the improvement of our aging roads, highways, and bridges in the State.
- Alternative energy development – Enhanced elevation data will help in attracting the industrial base for the assembly and maintenance of alternative energy systems for the northeast. Accurate elevation data are critical in finding suitable sites for wind power facilities.
- Communications and utilities- Enhanced elevation data will improve network and planning operations for electric, gas, broadband, phone, and cable providing for more effective and efficient equipment deployment while reaching a larger number customers.
- Climate change – our coastal and flood plain managers are requiring comprehensive and highly accurate elevation models to determine resources at risk from short and long-term inundation threats.
- Emergency preparedness/ Health – Our emergency personnel have a need for highly accurate data and elevation models to plan for all-hazards related to man-made or natural disasters.

- Waste management – accurate elevation models will help RI develop efficient methods to manage and dispose of solid and hazardous waste while protecting valuable resources.
- Watershed protection, water and wastewater management – better data will result in better management and conservation of drinking water resources while enhancing water quality for fisheries, beaches and recreation, and eco-tourism.
- Forest and wildlife managers rely on enhanced elevation models to characterize forest resources and develop baselines forest fire fuel modeling and monitoring.

This project will be a highly important component for revitalizing the economy of not only our state, but also the Northeast Region, which is why the Rhode Island Department of Health urges USGS to support this consortium-based proposal.

Sincerely,

A handwritten signature in blue ink, appearing to read 'D. Gifford', is written over a light blue rectangular background.

David R. Gifford, MD, MPH
Director of Health



**RHODE ISLAND
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT**

235 Promenade Street, Providence, RI 02908-5767

Rhode Island Relay 771

November 17, 2009

United States Geological Survey

To Whom It May Concern,

The Rhode Island Department of Environmental Management is pleased to offer its enthusiastic support to the "LIDAR for the Northeast" proposal submitted by the New England states for funding under the 2009 ARRA #10HQPAA0014 grant opportunity.

High resolution elevation data, currently available in only a few RI municipalities, has proven to be an extremely useful tool in development planning, timely permit review, water quality studies and habitat restoration. Statewide data funded through this grant will not only enhance these activities, but support a multi-year effort to map wildlife habitat, forest canopy, and vegetative communities.

Finally, we believe the cooperative nature of this joint application is especially important. The proposal ensures the most efficient use of scarce dollars while providing a consistent and much needed source of data for the region. We hope you will agree.

Sincerely,

A handwritten signature in black ink that reads "W. Michael Sullivan". The signature is written in a cursive, flowing style.

W. Michael Sullivan
Director,
RI Department of Environmental Management



STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

MILITARY STAFF
EMERGENCY MANAGEMENT AGENCY
645 New London Avenue
Cranston, RI 02920-3097
(401)946-9996



DONALD L. CARCIERI
Governor

MG ROBERT BRAY
Director

J. DAVID SMITH
Executive Director

November 20, 2009

To: United States Geological Survey

Re: Support of the proposal entitled "LiDAR for the Northeast" submitted to the 2009 ARRA grant funding opportunity #10HQPA0014 through USGS

On behalf of the Rhode Island Emergency Management Agency (RIEMA), I write in support of the New England LiDAR proposal. LiDAR is very important to Rhode Island due to our unique topography consistent of 21 coastal communities as well as inland areas. Rhode Island also has a strong reliance upon our working coastlines for economic support. The fishing and boating industry, along with extensive coastal tourism represent a tremendous economic resources for Rhode Island citizens and infrastructure in the coastal zone.

Here at the RIEMA, we are aware of the critical problem that global climate change is presenting to our communities and we feel that having the best available data to plan for future developments and specifically for the threat of environmental impacts during an emergency are critical. Therefore, the investment in the ARRA funds to move forward with the LiDAR initiative is very important to RIEMA.

More specifically it will be of great value to have the most accurate elevation data to move forward in updating the states FEMA Flood Insurance Rate Maps. This data can provide a platform of information when dealing with emergency preparedness issues. It is also of utmost importance to have the most accurate elevation models to help coastal communities plan for evacuation routes during hurricanes and nor'easters.

RIEMA is pleased to support the USGS as the leader of this project because we are aware of the importance of the data which will ultimately be provided. I am certain the project will directly help decision makers in the communities understand the difficulties associated with climate change, and ensure decisions which impact communities are done so with a mind towards planning for and modeling change in Rhode Island.

Thank you for your attention.

Sincerely,

J. David Smith
Executive Director, RIEMA

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

MILITARY STAFF

OFFICE OF THE ADJUTANT GENERAL

Command Readiness Center
645 New London Avenue
Cranston, Rhode Island 02920-3097



DONALD L. CARCIERI
Governor
MG ROBERT T. BRAY
Director

November 16, 2009

Mr. James Mauck
Orthoimagery and Elevation Theme Coordinator
U.S. Geological Survey
12201 Sunrise Valley Drive
Reston, VA 20192

Re: Support of the proposal titled "Lidar for the Northeast" submitted to the 2009 ARRA grand funding opportunity #10HQPA0014 through USGS

Dear Mr. Mauck:

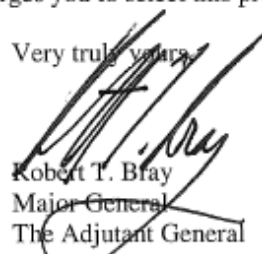
On behalf of the State of Rhode Island Executive Military Staff, I want to express strong support for the New England LiDAR proposal. Comprehensive and consistent high accuracy elevation data are very important to the primary mission of the RIARNG: protecting the citizens of the state of Rhode Island. These data provide the critical foundation for the following:

- Hurricane or nor'easter preparedness and response – Our emergency personnel have a need for highly accurate elevation models to aid during hurricanes or nor'easters, (identify flood-prone communities and plan evacuation routes, e.g.)
- Toxic spill or chemical gas release mitigation and containment – Elevation models help predict affected areas and assess strategies for containment.
- Providing the best and most accurate terrain maps for our state and regional training exercises and emergency operations.

The RIARNG is also committed to the development of green energy alternatives. A statewide LiDAR collection effort would greatly aid the RIARNG plan for green facility development and alternative energy designs on our training facilities and installations.

As one of the largest employers in the State, the collection of these data will help many RIARNG personnel do their jobs more effectively and efficiently. As such, this effort is a very wise investment of ARRA funds. The RIARNG strongly urges you to select this proposal for funding.

Very truly yours,


Robert T. Bray
Major General
The Adjutant General



The Coastal Institute
Narragansett Bay Campus
University of Rhode Island
Narragansett, RI 02882

Phone (401) 874-6513
Fax (401) 874-6869
Email pete@coi.uri.edu
www.ci.uri.edu

November 12, 2009

To: The United States Geological Survey

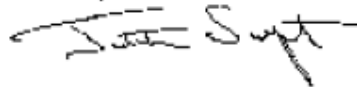
RE: Support for the LiDAR Northeast Proposal, 2009 ARRA Funding Opportunity

The Coastal Institute at the University of Rhode Island urges the United States Geological Survey to fund the Northeastern U.S. LiDAR data acquisition proposal. Sea Level Rise (SLR) is the biggest environmental and social challenge we have in coastal environments. In Rhode Island, the second most densely populated state in the country, we have billions of dollars of homes, commerce, and infrastructure possibly in future inundation zones. We do not have the capacity to map and model exact areas at risk because our best available digital terrain data (e.g., NED) are of insufficient vertical accuracy to measure and map flood zones that occur in the range of predicted SLR levels over the next decades. Comprehensive LiDAR data for Rhode Island will solve this problem.

We strongly support a regional approach to the LiDAR data development proposal. With the Northeastern States all using the same baseline data, our community of experts in federal, state, and academic institutions will have a common foundation to develop better SLR and storm surge models, and map the results of these models across state boundaries. Furthermore, the LiDAR data will allow us to better map flood zones in our upland areas. If storm intensity and frequency increases as some modelers predict, tens of thousands of Rhode Islanders and their property will be at risk from flooding resulting from these storms. Again, we have taken NED as far as we can to model flood zones in RI's interior. We need refined maps of areas at risk and the LiDAR data will provide that.

The Coastal Institute is committed to supporting RI on the Northeastern LiDAR data project coordination team. This is an incredibly important project for the University of Rhode Island scholarly community and we urge you to support this important work.

Sincerely,



Judith Swift
Director



Geospatial Extension Program
Coastal Institute
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greg@edc.uri.edu
<http://geospatial.uri.edu>

November 24, 2009

To: U.S. Geological Survey

I am writing to express my enthusiastic support of the project proposal titled "Lidar for the Northeast" submitted to the 2009 ARRA grant funding opportunity #10HQPA0014 through USGS.

I serve as the Rhode Island Geospatial Extension Specialist, and am hosted by the Department of Natural Resources Science here at the University of Rhode Island. The focus of my work is promoting and facilitating the use of geospatial technologies in the State. Between the workshops I conduct, and my ongoing service as Data Manager on behalf of the Rhode Island Geographic Information System (RIGIS) consortium, I work considerably with the day-to-day users of geospatial data in the State and surrounding region.

There is unquestionably a groundswell of support and interest in this proposal here in Rhode Island. We are fortunate to have a modest patchwork of LiDAR data available for small areas around the State, but the challenge we're all encountering is that these data were all collected using different specifications and were delivered with documentation that runs the gamut from stellar quality to mediocre. A single, consistent LiDAR dataset that encompasses the entire State of Rhode Island would open the door to some remarkable possibilities. For example, the most common data request I receive as RIGIS Data Manager that I am unable to fulfill, after municipal parcel boundaries, are high resolution elevation data. I am confident that the LiDAR data will help Rhode Island and RIGIS take a tremendous step towards meeting this wide-spread need. Rhode Island also sports more than 400 miles of coastline. A single, consistent dataset encompassing these areas would very much help RIGIS users to improve coastal inundation models in vulnerable areas, augmenting and refining FEMA's efforts. And this is just the start of the list of possibilities that RIGIS users have expressed to me.

Should this project be selected for funding, it will unquestionably fill a strong desire for high-quality elevation data in Rhode Island and the northeast United States.

Sincerely,

Gregory Bonyng, GISP



M. Jodi Rell

GOVERNOR
STATE OF CONNECTICUT

November 17, 2009

Mark L. DeMulder
Chief, National Geospatial Program
United States Department of the Interior
U.S Geological Survey
Reston, VA 20192

Dear Mr. DeMulder,

The State of Maine, Office of GIS is submitting an application on behalf the New England States, as well as the State of New York under the American Recovery and Reinvestments Act's National Map Program. This application proposes to collect valuable digital elevation information known as LiDAR for the coastal counties of New England from New York City to the Canadian border. I would like to take this opportunity to formally express my support for this proposal.

In addition to working with states throughout the region, this project will represent a collaborative partnership between the region and federal agencies – including the U.S. Geological Survey and Federal Emergency Management Administration. The ultimate benefactors of this proposal and outcomes stemming from this project are the millions of people living throughout the region.

In Connecticut, our four coastal counties are home to over 2 million people representing over 60 percent of Connecticut's population. Connecticut's coastal communities comprise the northern shore of Long Island Sound – one of the country's most treasured natural resources. The LiDAR mapping information secured through this proposal will provide our state agencies and universities greater ability to understand the dynamics of the land that affects this tremendous resource.

Utilization of this mapping technology will significantly enhance the region's ability to prepare for and respond to emergency situations, including natural disasters. In addition, having this sophisticated tool at our disposal will prove to be invaluable for environmental and transportation planning purposes.

The benefits of this proposal are not limited to those of planning and research, however. This project will support the greater mission of the ARRA; creating jobs. This proposal, if funded, will generate high tech jobs in the New England region in the geospatial

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technology industry. In addition, the availability of this information will aid those in the private sector, such as engineers and resource managers, who will be able to do their work more effectively and efficiently.

Connecticut is committed to working cooperatively with the New England States and federal agencies on this project. By using a regional approach, we believe we have the opportunity to provide a high-quality product at a lower cost than working as individual states. More importantly, however, working collectively on this initiative will benefit residents from the entire region – furthering public safety preparedness and response efforts while enhancing our awareness as to the natural resources throughout the region.

Very truly yours,

A handwritten signature in cursive script, reading "M. Jodi Rell". The signature is written in dark ink and is positioned above the printed name and title.

M. Jodi Rell
Governor


New York State Energy Research and Development Authority

 Vincent A. DeIorio, Esq., *Chairman*

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November 30, 2009

Ms. Marcia McNutt
 Director, USGS Headquarters
 MS 100, John W. Powell Federal Building
 12201 Sunrise Valley Drive
 Reston, Virginia 20192

Re: NYSEDA Statement of Interest for "The National Map: Imagery and Elevation Maps" in reference to the United States Geological Survey Grant Program Announcement No. 10HQPA0014

Dear Ms. McNutt:

On behalf of the New York State Energy Research and Development Authority (NYSEDA), I am providing this letter to express our strong interest in and endorsement of this multi-state proposal to the US Geological Survey's, "The National Map: Imagery and Elevation Maps" being coordinated by the Maine Office of GIS.

NYSEDA is supporting significant research on the impacts of climate change in New York State and sees this project as a key towards understanding the potential ecological and infrastructure impacts of sea level rise. This represents a unique opportunity to partner with neighboring states and New York State Agencies to collect and process high resolution LiDAR and orthoimagery data for our coastal and Hudson River Estuary regions.

For New York State, the project will collect data where existing information is lacking to develop a comprehensive and consistent elevational data map. The expense of collecting LiDAR over large regions by a single state entity and the administrative requirements necessary to manage the collection technology is prohibitive. In addition, cost savings expertise available through the USGS in administering technical aspects of LiDAR collection represents substantial advantages. NYSEDA staff have worked with the New York State's Office of Cyber Security and Critical Infrastructure Coordination in developing the scope of this proposal to ensure the application has been compiled to address the broadest possible range of user information needs.

As a demonstration for our interest and support, NYSEDA will provide cost-shared funding of up to \$40,000 to the project subject to success in obtaining this USGS grant for this effort and contingent upon reaching mutually acceptable contract terms and conditions and the availability of NYSEDA funds. These funds are intended to assure that high resolution LiDAR and orthoimagery data is collected for regions where it does not currently exist along both sides of the Hudson River, from its mouth at New York City to the Federal Dam in Troy, NY. The width to which new data will be collected will be contingent upon final costs and the usefulness of existing, available data.

We hope that this proposal will be favorably considered for funding. This is an exciting and important endeavor. If you have any questions, please contact Gregory Lampman at (518) 862-1090 ext. 3372: ggl@nyserra.org.

Sincerely,

Robert Callender
 Vice President for Programs

Cc: Mr. Frank Kenney, USGS Liaison for New York

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New York City
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Buffalo
 Larkin at Exchange Building
 726 Exchange Street, Suite 821
 Buffalo, New York 14210
 Phone: (716) 842-1522
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New York State Department of Environmental Conservation
Hudson River National Estuarine Research Reserve
Norrie Point Environmental Center P.O. Box 315 Staatsburg, NY 12580
Phone: (845) 889-4745 • FAX: (845) 889-4749
Website: www.dec.ny.gov



November 24, 2009

Marcia McNutt
Director
USGS Headquarters, MS 100
John W. Powell Federal Building
12201 Sunrise Valley Drive
Reston, Virginia 20192

Dear Ms. McNutt:

I am writing in support of New York State's efforts to collect LiDAR through the United States Geological Survey's ARRA funding opportunity. Collection of LiDAR along the shores of the Hudson River Estuary will advance sustainable coastal development, hazard reduction, and promote healthy coastal ecosystems through the provision of in-depth, detailed information and mapping tools that will outline the risk of sea level rise and storm surge to local leaders in the Estuary watershed.

LiDAR is needed to develop the technical and mapping tools to help local leaders along the Estuary's shoreline whose decisions create the land use patterns that will determine, in large measure, the quality of life, the economy, and the environmental well-being of communities on the shores. We are particularly interested in seeing this proposal funded, as it has the potential to advance technical information and outreach related to the Sustainable Shorelines Project, a multi-year NOAA and NYS-funded program to explore the ecological, economic, and structural tradeoffs of different shoreline management techniques under plausible climate change scenarios. This project, led by the Reserve, involves many partners, including several state agencies and private partners, and specifically targets local decision-makers as one of its priority audiences for outreach and training.

We anticipate that the maps generated by this collection of LiDAR data will be used in training programs will be a model for sea level rise training in other coastal areas. We welcome the opportunity to advance the visions and goals of the proposal, and we commit to providing \$5000 in matching funds for this project.

Thank you for your consideration.

Sincerely,
Betsy Blair
Elizabeth A. Blair, Manager



David A. Paterson
Governor

**New York State
Office of Cyber Security & Critical
Infrastructure Coordination**

30 South Pearl Street, Floor P2
Albany, NY 12207-3425
(518) 473-4383 Fax: (518) 402-3799



William F. Pelgrin
Director

November 25, 2009

Ms. Marcia McNutt
Director of USGS
USGS Headquarters
MS 100
John W. Powell Federal Building
12201 Sunrise Valley Drive
Reston, Virginia 20192

Dear Director McNutt:

I am writing to express my support for the *LiDAR for the Northeast* proposal being coordinated by the Northeastern States to acquire LiDAR elevation data along the New England coastline and extending to include portions of New York State coastal and tidal areas. This proposal for coordinated data collection across state and regional boundaries exemplifies the approach that is most effective for building geospatial data to support a wide range of uses spanning from local planning and decision-making to State and federal program management and policy development.

My agency, the New York State Office of Cyber Security and Critical Infrastructure Coordination (CSCIC), is responsible for New York's geospatial coordination activities. As part of this responsibility, we host the GIS Coordinating Body with representatives from state, local, federal, not-for-profit, private, and academic sectors to provide advisory guidance to my agency's programs. The GIS Coordinating Body has been in place since 1998 and has been instrumental in the success of our Coordination program activities including statewide digital orthoimagery, streets and addresses, and much more. We fully understand and appreciate the value of a coordinated approach to share resources, save money, and deliver consistent data to support the widest possible range of uses. CSCIC is also the distribution point for public access to geospatial information through our GIS Clearinghouse website. We know that wide distribution of data helps "prime the economic pump" by getting the data into the hands of GIS and engineering firms for additional projects.

CSCIC has significant experience working with multiple state and local agencies on LiDAR projects. Last year we worked cooperatively with the New York City Department of Environmental Protection and USGS on the collection of imagery and LiDAR data covering more than 2700 square miles of the New York City water supply area in the Catskill Mountain region of New York. We have also coordinated LiDAR data collection projects for portions of four counties in recent years. Based on our experience, we are well positioned to coordinate the New York portion of the proposed *LiDAR for the Northeast* project.

The *LiDAR for the Northeast* project footprint includes approximately 800 square miles and significant portions of the Long Island shoreline areas in the metropolitan New York City area. These coastal and riverfront areas are highly important to the economy of the region given the dense concentration of people and infrastructure in a low-lying coastal area. This region extends across the State line into Connecticut.

LiDAR data for this region will be particularly useful for improving our understanding of the risks and impacts associated with hurricanes, coastal storm surges, and rising sea-level in the interconnected regions of the Hudson Valley, New York City, and Long Island. The data will also be valuable for understanding ecosystem impacts in Long Island Sound between New York, Connecticut, and Rhode Island. A consistent data set across this multi-state area is an essential component to developing strategies and solutions.

Finally, I am a member of the Economic Recovery Cabinet established by Governor Paterson. In this capacity, I am able to coordinate with other agencies to ensure that projects such as the *LiDAR for the Northeast* proposal are leveraged for the greatest economic benefit to New York.

I look forward to approval of ARRA funding of the *LiDAR for the Northeast* proposal and beginning work on this exciting project.

Sincerely,



William F. Pelgrin
Director

cc: Frank Kenney
USGS Geospatial Liaison to New York
425 Jordan Road
Troy, New York 12180



Stormwater Coalition of Albany County

Members

Albany County
City of Albany
Town of Bethlehem
City of Cohoes
Town of Colonie
Village of Colonie
Village of Green Island
Town of Guilderland
Village of Menands
Town of New Scotland
Village of Voorheesville
City of Watervliet
SUNY-Albany

Supporters

Capital District Regional Planning Commission
Albany County Soil and Water Conservation District

November 24, 2009

Marcia McNutt
Director
USGS Headquarters
MS 100
John W. Powell Federal Building
12201 Sunrise Valley Drive
Reston, Virginia 20192


Dear Ms. McNutt:

The Stormwater Coalition of Albany County supports the attached proposal for the collection of LiDAR data for the coastal counties of New York. The Coalition is charged with cooperatively implementing the Clean Water Act Phase II Stormwater Regulations, and as such we are keenly interested in the sound management of water resources and recognize the value of LiDAR technology.

Of particular concern, given the number of coastal municipalities within Albany County, is the creation of a complete Hudson River LiDAR data set, managed by skilled practitioners. This data set will make possible a careful analysis of climate change impacts, due to sea level rise and provide baseline information critical to the development of effective emergency response plans. This particular proposal would supplement existing LiDAR data collection efforts, and make possible a River-level analysis, which is a clear and necessary next step for all coastal communities.

This technology represents, as well, the beginning of a technological and mapping leap for GIS practitioners in the Albany area. As such, it will encourage new mapping applications and nurture the next generation of stormwater and flood plain managers, already a source of new jobs in the Capital District.

Sincerely,


Nancy Heinzen
Stormwater Program Coordinator

c/o Albany County Department of Economic Development, Conservation, and Planning
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